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IN THE ELEVEN WESTERN STATES

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Journal of Electricity

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IN THE ELEVEN WESTERN STATES

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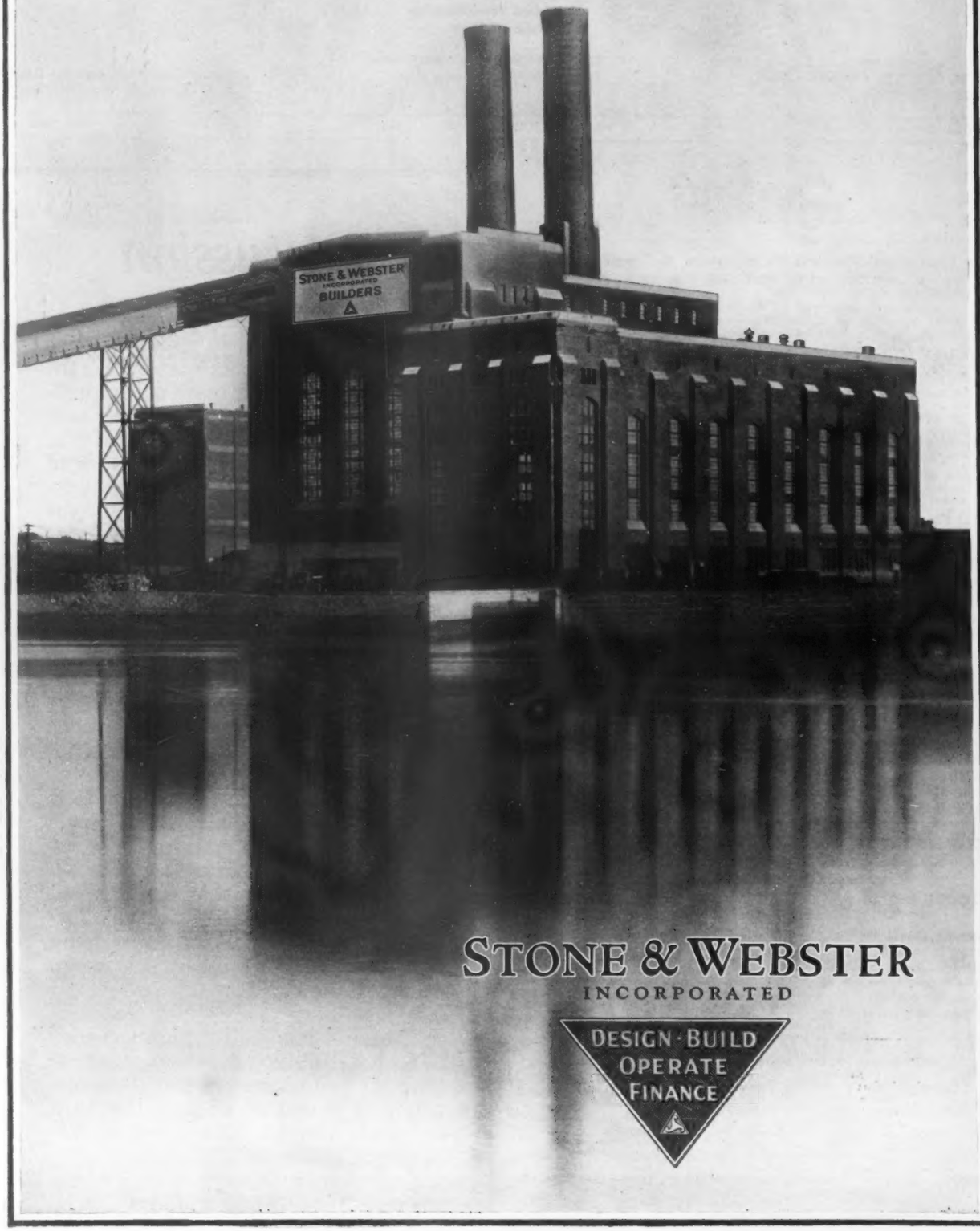
Discussion

ONE of the principal functions of a trade journal is that it furnish an open forum for its readers for the discussion of their particular problems. This does not mean that contributions must be in the form of signed articles. For the purpose of providing a section for the expression of the views of its readers the Journal of Electricity carries a department headed "Discussion." In it are published letters from readers expressing opinions of material carried in a preceding issue or taking exception to editorial opinions or the opinions of contributors.

The editors welcome contributions to this section. If a reader does not concur with the statements of the editors or a contributor, if an article or a news item calls to mind something of a related nature which he feels would be of interest to his associates, we hope that he will set down his opinions on paper and forward them to the editors. By so doing he will be performing a service to others in the industry.

The editors do not want any reader to feel that his contributions, suggestions or criticisms are not welcome, when as a matter of fact they are earnestly desired. Discussion is welcomed at all times.

First Unit of WEYMOUTH STATION, THE EDISON ELECTRIC ILLUMINATING CO. of BOSTON, I. E. Moultrop, Ass't Supt., Bureau of Construction——60000 Kw.



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EDITORIAL

Congratulations Due the Contractor-Dealers of California

ON Thursday, March 26 last, a meeting took place in the city of Los Angeles that marked a great step forward in the affairs of the electrical industry in California. On that day plans were perfected by which the Southern California Electrical Contractors' Association joined forces with their brethren in northern California whereby a statewide working organization of electrical contractors has come into existence for the first time in the history of the industry. The new body will be known as the California Electragists, affiliated with the Association of Electragists, International. Thus the Electragist movement is launched in real earnest in California, and it is not difficult to predict that the influence of the Electragist idea will mark a new era for electrical contracting in this state.

Too much credit cannot be given to the earnest hard-working men whose devotion and self-sacrifice have made this step possible. H. H. Walker, C. J. Geisbush, F. E. Elser and Frank McGinley of southern California, Victor Lemoge, Clyde Chamblin, H. H. Courtright and Walter F. Price of northern California, and many others have labored long and steadfastly in order to bring this coalition about.

We bespeak for the California Electragists the earnest support and hearty cooperation of the entire industry.

Specialization and the Executives of the Future

SINCE this is an age of specialization, where shall we get the executives of the future? This question may be expected to crop out at frequent intervals when men talk shop over the lunch table or at business conferences. The story will be told of the mechanic, so-called, who was applying for a job. When asked what his experience had been, he replied that he "had been drilling $\frac{5}{8}$-in. holes in axle casings at the Ford factory," thus presenting a vivid picture of the mechanic of today.

There is the professor who spends a lifetime in the study of Greek infinitives, the central-station engineer who specializes on protection devices, and the countless others who concentrate all of their abilities upon some detail that forms merely a part of the whole. Where will they come from, and how are they being trained, the men who will see the picture in its entirety and be able to direct and coordinate the work of the countless specialists?

The engineer has been urged to make himself the man of the hour, to qualify himself to take executive responsibility, to be the boss instead of the hired man. But how can the specialist "unspecialize" his thinking? It is a difficult job indeed.

And here enters whom?—The lawyer, forsooth, the corporation attorney, whose practice is so general in contact with business and industrial problems of all kinds that he has become the general business practitioner who gives orders to the crew of specialists, the "Greek-root boys."

Who are the presidents of the Pacific Gas and Electric Company, the Great Western Power Company, the Portland Electric Power Company? Wigginton E. Creed, Guy C. Earl, and Franklin T. Griffith, respectively, all lawyers of note in their chosen profession who have made a success in solving the knotty problems of finance and business administration. E. H. Gary, chairman of the board of the United States Steel Corporation, is a lawyer, not a steel man.

What is the lesson for the young man about to enter college? Study law, young man, whether you expect to follow it forever or not. Apparently there is the top rung of the ladder awaiting you, if you train yourself for it, while the engineer would appear to be foredoomed to the part of hired man in the industrial scheme of things.

A Good Name and Great Riches

WHEN a man changes his name he is regarded with a certain amount of suspicion. One is inclined to infer that the name which he has abandoned is no longer an asset, that it has become a liability. It would seem reasonable to assume that the same rule might be applied with equal force to something inanimate—an article of commerce or a type of business establishment.

These few remarks are prompted by an attempt that now is being made by a publication issued in Chicago and purporting to be in the interests of the electrical industry to make a determined assault upon our old friends, the central station and the convenience outlet. It is alleged that these terms are not sufficiently descriptive of the functions of each and that through their use a certain amount of confusion is brought about in the minds of the general public when reference is made to the central station or to the convenience outlet. Possibly Californians may be somewhat sensitive as to any liberties taken with the convenience outlet, because, if our information is correct, this term was invented in California

and has been made to carry a real significance in the minds of the people through large expenditures of money, time and effort on the part of the electrical industry. We don't know the origin of the term central station, but assume that it was devised in order to set up a distinction between the generation of power for public service and that of isolated plants for a private consumer only.

Why is a horse? The word horse conveys a definite idea to all of us, not because the term is particularly descriptive but because a horse has always been a horse, at least for many thousands of years. Nevertheless, we have, as well, saw horses, clothes horses, horse radish, and for the benefit of the "high-brow" readers of this editorial, a geological occurrence known as a nintrusion of one mineral on another, which is also called a horse. Should we rob our old friend the horse of his good name merely because of the existence of these other kinds of horses and change his name perhaps to eohippus as being more neary descriptive? We hope not. Seriously the thought of calling the central station something else and doing the same thing with the convenience outlet would be like starting all over again to establish good will for these two very useful factors in our industrial life, and this without any compensating circumstances.

Power Companies in the Role of True Sportsmen

STEWART Edward White in a recent series of articles in a national publication calls attention to the fact that this is the time of year that the inveterate sportsman begins going over his duffle, taking stock of his hunting and fishing equipment in preparation for the coming of spring and the opening of the fishing season. This brings to mind the fact that the central stations of the West are doing their part in the conservation of fish and wild game generally.

Each year the power companies in California plant literally millions of trout fry in the streams of the watersheds in which their developments are located. One company receives an entire carload of fry every year that are transported first in trucks and then by pack-mule to the headwaters of nearby streams and planted for the enjoyment of sportsmen in future years. Another company planted many thousands of small fish in the lakes adjacent to one of its projects. Cooks in the construction camps fed the fish all one year and kept the lakes posted so that unscrupulous fishermen would not catch them before they had matured.

As a further illustration of the steps the companies are taking to conserve wild game, we quote from a national recreational magazine the following: "The Western States Gas & Electric Company deserves great credit for the splendid spirit of cooperation it has shown in protecting the deer in the high Sierras. A great many industrial enterprises would do well to take a lesson thereby." The deer in migrating from the higher elevations to their winter ranges encountered the company's canal, which was concrete-lined for about six miles. In attempting to jump the canal many deer were drowned. After consultation with the California Fish and Game Commission the company constructed an 8-ft. fence along this section of the canal with openings and bridges every 1,500 ft. This served to protect the animals and to reduce greatly the number of casualties.

The true sportsman will offer up a silent prayer and vote of thanks to the companies which are doing so much to conserve wild life in the mountains and to maintain the name which the West has held as "the sportsman's paradise."

Support Those Who Support Your Industry

ON another page of this issue there appears a story of a meeting of the newly organized electrical league formed by the electrical contractors and others in the North Bay district. The newly formed association selected a bank as the depository of its funds because it was completely equipped electrically. This is a commendable move on the league's part. If a bank or other organization is progressive and employs electricity in its many phases, why shouldn't it receive the patronage of the members of the electrical industry? Is there any better way to show appreciation?

DISCUSSION

Application of Portable Motors for Orchard Spray Pumps

To the Editor:

Sir—Mr. H. S. Vaile inquires as to the possibility of using portable electric motors in connection with portable spray pumps. He also wonders if it would be possible to spray with some type of "compressed air or small portable blowers," rather than piping to hydrants throughout the orchard. The following advantages and disadvantages have been pointed out for the stationary spray plants.

Advantages —

1. Spraying is not affected by soil conditions.
2. Pests that require quick action are speedily controlled.
3. Large orchards may be sprayed as effectively as small ones.
4. Convenience and saving in time and labor.
5. Long usefulness and low depreciation of equipment, a permanent improvement.
6. Spraying is possible with minimum danger of knocking or bruising the fruit on heavily laden branches.
7. Props do not prevent spraying.
8. Hillside orchards may be more easily sprayed.
9. Intercropping is possible.
10. Possibility of using electric power.

Disadvantages —

1. Initial cost.
2. All responsibility is on one plant.
3. Non-portability.
4. Possibility of spray material settling in pipes.
5. Upkeep and attention to numerous parts.
6. Possible damage to system during cultivation.
7. Possible loss by leakage.
8. Some spray material is wasted.
9. Slight loss in pressure due to friction.
10. Demand charge on electric motor.

It is evident that the main reason for installing piping systems in the orchard is to permit of spraying under very adverse conditions, without damage to trees or fruit. Frequently it is very difficult and sometimes impossible to draw a portable rig through the orchard because of either the sandy or muddy condition of the soil. Time is also an important element and it is felt by some that by being able to operate several nozzles at once, that the effect of the spray is greatly increased.

This question must not be looked at from the standpoint of one type of motor versus another; nor yet should it be looked at from the standpoint of one rig versus another, but must be considered from the standpoint of economy and efficiency. The writer is unable to give specific operating costs at this time, but tests are now in progress on the various California plants, and tabulations are being made which will be a guide to the cost of installation and operation.

Some type of atomizer similar to the air brush or spray gun used in washing automobiles may be developed, but up to the present time there are no available data on their operation. One manufacturer, at least, Puro Manufacturing Company, Charlottesville, is making investigations of the use of a steam atomizer, but here again the orchardist will be confronted with the necessity of pulling comparatively heavy machinery through the orchard. Uniformity of solution and convenience of mixing are pointed to by the users of stationary plants as being marked advantages.

I have been unable to locate any portable outfits that are equipped with a motor and cannot, therefore, back up my statements by figures.

The Committee on Relation of Electricity to Agriculture has the investigation of stationary spray plants as a definite project, and tabulations and reports should be available by the first of May.

B. D. MOSES,
Division of Agricultural Engineering,
Davis, Calif., University of California.
March 23, 1925.

Larger Allowances for Fixtures Needed in House Specifications

To the Editor:

Sir: I am enclosing a copy of a letter that I have mailed to a large group of architects and contractor-builders devoting their time to the designing and erecting of homes in the West. The letter is being sent with the hope that the architect and builder may be informed of the present inadequacy of the allowances for fixtures that are made in the average home specifications.

I feel that, through the failure of the architects and builders who are responsible for the making of allowances for fixtures many homes have been furnished with lighting fixtures which are below the standard of the rest of the house, with the result that the entire appearance has been marred. To advise the architects and builders of the importance of adequate allowances for the lighting fixtures in the house is the duty of the entire electrical industry.

Contact with the architects and builders who are responsible for the erection of homes in the West is necessary. It is also imperative that whenever the opportunity presents itself every man in the electrical industry must impress upon the architect and contractor-builder the importance of adequate allowances for all classes of electrical installations in the new homes of the country.

I feel that every time the allowance for wiring or fixtures is too low, the entire electrical industry suffers. The home-owner, relying upon the judgment of the architect, concludes that the cost of adequate electrical equipment is too high and either installs cheaper and less electrical equipment or orders the material his house requires and feels that the electrical industry is robbing him.

What is needed is the education of those responsible for the designing of the homes of the West. It is up to the electrical industry to do the educating.

B. J. WILDMAN,
San Francisco, Pacific Coast Manager,
March 19, 1925. Moe-Bridges Company.

Editor's Note.—Mr. Wildman's letter to the architects and contractor-builders reads as follows:

"Architects and contractor-builders do not seem to realize the full sales value of attractive lighting fixtures. They are the only permanent decorative feature of the home. Either for re-sale or renting no other feature will contribute so much as attractive lighting fixtures. A contractor once told the writer he made more money on the fixtures of his houses than on any other one item, because he invested enough in them to enhance the value of everything else.

"In spite of this fact there seems to have grown up a custom among some architects and builders to make an allowance for fixtures, an allowance wholly inadequate, with the result that the real buyer of the fixture loses faith in both the architect and the fixture dealer. He discovers that $40 is not enough for a five-room bungalow, nor $100 for a $10,000-home. To make such an allowance is like recommending a rag carpet for the living room. If an allowance at all is made it should be for at least 3% of the cost of the house.

"As we say, the custom seems to have become quite prevalent. In fact, upon a recent tour through the main centers on the Pacific Coast, during which I called on an innumerable number of electrical dealers, large and small, and attended several conventions, I made inquiry as to the outstanding weakness of the lighting fixture business. Almost to a man they agreed that the custom of architects and builders in making an allowance for fixtures was destructive to the best interest of the industry. The trouble lies not in making an allowance, but in making an allowance wholly inadequate.

"May we ask that you think it over, keeping in mind that in making an allowance that is not adequate the judgment of the architect and builder is subject to criticism, and likewise that in cheapening any phase of the electrical industry you cheapen it all."

SAN FRANCISCO, scene of the forty-eighth annual convention of the National Electric Light Association to be held during the week of June 15, as seen from the hills back of Berkeley. The steel tower line is part of the transmission system of the Pacific Gas and Electric Company. In the right background is the Golden Gate while the dark blotch in the bay is Goat Island.

Age Limits and Physical Examination of Employees

By a Special Subcommittee of the "Tacoma Foremen's Conference"

Puget Sound Power & Light Company, Southwestern Division, Tacoma, Wash.

THE "Tacoma Foremen's Conference" is a monthly meeting of the superintendents of departments of the Southwestern Division of the Puget Sound Power & Light Company and its electric railway subsidiaries having headquarters in Tacoma, Wash. Among the subjects recently considered by the conference were those of age limits and physical examinations for employees, and the report issued by the subcommittee formed to investigate the subjects is so comprehensive that it is published here for the benefit of other companies interested in studying the inter-relation between the management, the employee and the public.

TO investigate the advisability of establishing a standard practice in regard to age limits of new employees in the various departments of the Puget Sound Power & Light Company, and of making a standard physical examination a condition of employment in all departments; after such investigation, to make definite recommendations on these two subjects—these were the objects of the special subcommittee appointed at the sixth meeting of the "Tacoma Foremen's Conference" held Sept. 19, 1924. This committee consisted of H. J. Nason, roadmaster of the Puget Sound Electric Railway Company, chairman; F. S. Hoffman, T. F. Marsh, H. A. Ritter, C. A. Miller and L. O. Granstrom.

History of the Subject

It seems fitting at this point to present a brief outline of the history of age limits and physical examinations in industry, inasmuch as the experience of others has guided this committee to some extent in their consideration of the problem. So much work has been done in this field that no examination of the subject, however brief, would be adequate without a reference to its history.

It has been fairly uniform practice for a good many years throughout industry in general and the more hazardous industries in particular to limit the age below and above which new employees are taken into service. Legal restrictions and responsibilities have established pretty definitely the lower limit at the age of majority. The upper limit has varied from thirty, which is now the rule on the western lines of the Chicago, Milwaukee & St. Paul Railway for inexperienced section foremen and bridgemen, to fifty. There are, of course, many industrial concerns which have no age requirements, but by far the most common practice among the larger firms is to hire only men between the ages of twenty-one and forty-five.

The history of physical examination in industry is by no means so settled, nor are the present practices so uniform.

Physical examinations were introduced into industry in 1909 by a few of the larger industrial corporations in the East. The sole object at that time was to eliminate those workers whose defects rendered them dangerous to themselves, to others, or to property. The men who had charge of the introduction of this work, having no precedent to guide them other than the experience of the railroads and certain extra-hazardous industries which had for some time examined their men for special requirements, turned to the life insurance companies and based the examination on their standards and general medical practice.

The result of this procedure was found to be an undue emphasis on elimination. The examinations were not based on the requirements of the work and, as a consequence, were in nearly all cases too stringent. Soon it was felt that some uniform system of examination which would meet the requirements of the job was needed. To meet this need there was organized in 1914 the Conference Board of Physicians in Industry.

This board is composed of the medical directors of a large number of prominent industrial corporations. A partial list of these shows the standing of this board: Philadelphia Electric Company, The Norton Company, American Thread Company, International Harvester Company, Cadillac Motor Car Company, Westinghouse Electric & Manufacturing Company, New York Edison Company, Yale & Towne Manufacturing Company, Hood Rubber Company, Eastman Kodak Company, and American Telephone & Telegraph Company.

In 1915 this board, representing 24 large factories, established examination standards and defined different degrees of physical defects. This resulted in a marked improvement in conditions until the general rejection percentage fell to ten, according to a survey conducted in 1918.

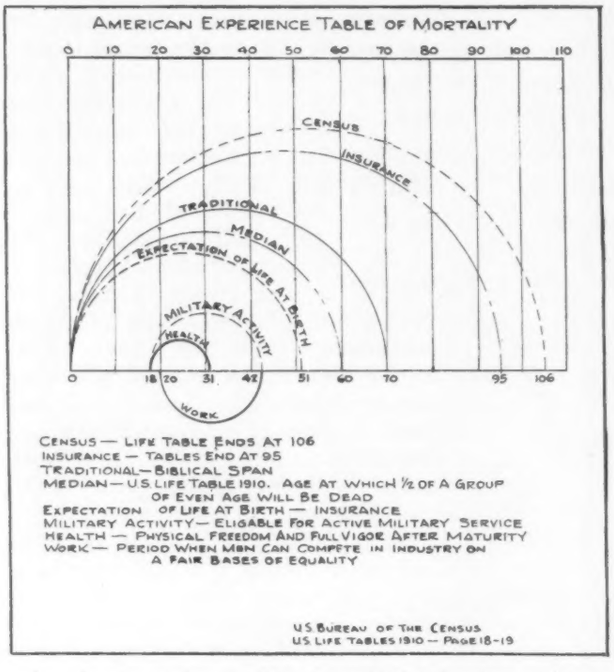
This percentage was considered still too high, and steps were taken to adjust the examinations more perfectly to the requirements of the job, until in 1920 an investigation of thirty-four plants, representing fifteen separate industries and a force of 410,106 men, showed a rejection percentage of only 4.6.

Meantime the attitude of the employers had been changing so that the objects of the examinations

were not primarily to eliminate the dangerous worker but to place the subnormal applicant in work suited to his capacity. Some concerns have been able to reduce their rejection percentage to the surprisingly low figure of 1.8.

The experience of thirteen years has shown that the tendency is to reduce the standards of rejection. Also it has shown unquestionably that physical examination is worth while. J. W. Schereschewsky, surgeon, in a report called "Physical Examination of Workers," in Public Health Reports, Vol. 29, No. 47, issued by the U. S. Public Health Service, has this to say:

"The question which inevitably arises is: will it pay? The answer must be unhesitatingly in the affirmative. The experience of all plants in which such systems have been put in operation is so satisfactory that no doubt has arisen in the minds of their officers that medical supervision does pay in increased efficiency of the working force, greater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MILITARY ACTIVITY — ELIGABLE FOR ACTIVE MILITARY SERVICE
HEALTH — PHYSICAL FREEDOM AND FULL VIGOR AFTER MATURITY
WORK — PERIOD WHEN MEN CAN COMPETE IN INDUSTRY ON A FAIR BASES OF EQUALITY
U.S. BUREAU OF THE CENSUS
U.S. LIFE TABLES 1910 — PAGE 18-19

American experience table of mortality showing various established life curves.

content of the workers, greater cooperation between employers and employed, and in greatly diminished loss of time and suffering from preventable disease."

Age Limits

The principal arguments for establishing age limits are two:

1. The employers and the workmen are protected against inefficiency and hazard that result from the presence in industry of workmen too young to be responsible or too old to be capable.

2. The employer is enabled to build up an organization that will not become a liability in the future. It is the universal desire among the employers of labor to secure and maintain a stable and at the same time efficient personnel. Experience has shown that the way to do this is to select employees old enough to be responsible and young enough to be able to give their best efforts in return for an adequate wage and fair treatment. Such men become efficient at the tasks assigned to them so that after ten years or twenty years they are still able to compete on a favorable basis with younger men who have not had the advantage of their experience.

It is fitting at this point to call attention to a chart called the "American Experience Table of Mortality," which is prepared by the U. S. Bureau of the Census. It is found on pages 18 and 19 of the "U. S. Life Tables," 1910. This chart of course is based on averages, and consists of a series of curves on a plan representing the various years of life from birth to 110 years. The first curve, the census curve, is based on the census life tables, which end at 106 years. The insurance curve is based on standard insurance tables which end at 95. The traditional curve represents the Biblical age of man, three score years and ten. The median curve ends at 60 years, which is the age at which experience shows one-half a group of even age will be dead. The expectation-of-life-at-birth curve is the common insurance figure of 51 years.

Period of Greatest Usefulness

The last three curves are significant for the purpose of this discussion. The military-activity curve begins at 18 years and ends at 42. These are the limits between which a man is eligible for active military service. It will be noted that this corresponds closely with industrial experience. The health curve, which is rather startling in comparison with the others, extends from 18 years to 31, and represents the best years, physically, of mature life. The work curve, below the lower line of the chart, extends from 20 years to 42, and represents the period when men can compete in industry on a fair basis of equality.

It may be argued against these figures that they have no practical application to the affairs of any one industrial plant. They represent averages, however, and they are based on experience. They are accordingly worthy of attention when the subject of age limits in industry is under discussion.

The principal argument against the establishment of age limits is that it discriminates unfairly against elder men, many of whom are out of work by reason of industrial changes, business depression, or any economic cause over which they have no control. Whatever merit there is in this argument is a reflection on the adjustment or maladjustment between the demand and supply of labor. This is a very vital problem at all times in this country as a whole, and at certain times in every industrial plant. Its solution, however, is beyond the scope of this discussion, and does not depend in any essential way on the matter of age limits.

Another argument against setting age limits is that at certain times they may operate as a handicap in securing labor. The answer, of course, is that emergency demands call for emergency methods and that at such periods it is quite possible to modify the rule.

Physical Examinations

The original and still important argument in favor of physical examinations has been stated before in this paper. Its phraseology has become classic: "Physical examination eliminates those workers whose defects render them dangerous to themselves, to others, or to property." This results in

1. Reduction of accidents and absenteeism,
2. Prevention of the spread of contagious disease, and
3. Improvement in morale.

A concrete, and for the purpose of this discussion, an important eample of this argument is furnished by the transportation business. The public has a right to expect that all men who are responsible for its safety shall be physically fit to discharge their duties safely. It is therefore the duty of the employer to provide such men. If he allows a man to handle the public when he knows that the man is liable to an attack of any sort that would render him incapable of performing his duties, that employer is criminally negligent. Further, if through ignorance he allows such man to work, he is no less criminally negligent. He has no right to assume that his men are physically fit; it is his business to know. Such knowledge can be gained only by a physical examination at the time of employment and subsequent examinations at regular intervals.

From the worker's point of view, physical examination with the consequent attention brought to bear on his physical condition will result in less time lost, better health, and the checking of many preventable chronic ailments.

Arguments Against Examinations

The stock arguments against physical examination are that they are embarrassing and unnecessary, and that they can be used and have been used by some employers to discriminate against certain workers. The answer to this argument is that the day of the unscrupulous employer of labor is on the wane, if not already gone.

Another objection to physical examination demands more consideration. It has been argued with some logic and much heat that the introduction of a system of physical examination will disqualify at once a certain percentage of present employees, some or all of whom are otherwise efficient, loyal and satisfactory. There is no question but that this objection is the hardest one for a proponent of physical examination to meet, since in any extreme case it would be true that an otherwise satisfactory employee might be disqualified from doing the particular work that he was doing at the time of the examination. The practical solution of the difficulty is the recognition on the part of the employer of a certain measure of responsibility in such cases. This usually takes the form of a transfer of the employee to other work where his defect will not debar him.

One other objection might be mentioned—expense. Physical examinations, particularly periodic ones, cost money. The expense, however, need not be prohibitive, if suitable forms are provided and fair relations are established with the medical force. There are very few cases on record of concerns giving up physical examination on the ground of expense. The uniform practice is, of course, that the expense is borne by the employer.

The records of the introduction of physical examination throughout the country show that the objections to the practice are not insurmountable. It all depends on how the matter is presented to the men. If they are shown wherein they will be benefited, and that their rights will be amply protected, they usually adopt the plan without hesitation. They must be "sold" on it, however, and the time and effort spent in "selling" them is well worth while.

To sum up the situation, it may be stated confidently that there is a very strong case in favor of physical examination in industry. It should be borne in mind, however, that there is still much pioneer work to be done, especially in the western part of the country, and that a uniform system in all departments of a company is still far from common.

Recommendations

This committee has considered both sides of these matters from many angles, and wishes to make the following recommendations:

I. For the purpose of this report a "permanent employee" shall be considered to be one who has been in service thirty days or more.

II. Age limits for new employees in all departments of the company should be

1. 21 to 35 for inexperienced men, and
2. 21 to 45 for experienced men.
3. Applicants under 21 and over 45 may be hired for special or part-time work at the discretion of the department head. In such cases the latter should be able to justify to the management his departure from the rule.

III. A standard physical examination should be a condition of employment in all departments of the company.

1. This should be a careful and exhaustive examination given by a competent licensed physician designated by the company.
2. Licensed physicians should be designated by the company at various points for the convenience of applicants.
3. This examination should be given after the applicant has been accepted for employment and before he goes to work.
   (a) It may be omitted in cases of temporary employment. At the end of thirty days the employee automatically becomes permanent and then should be examined.
4. At the time of this examination the doctor should furnish the applicant with advice regarding his physical condition and a copy of the examination if the applicant so desires.
   (a) This does not include treatments of any sort.

IV. A committee should be appointed to confer with the company doctor or doctors with a view to drawing up a suitable form of examination.

1. The examination in use at the present time by the Employees' Beneficial Association is considered unsuited to the requirements of this work.

V. Every employee should be re-examined periodically, preferably once a year.

VI. Each department head should work out in connection with the company doctor a schedule of disqualifying defects for his own department.

1. This schedule should serve as a bar to employment in that department only.
2. This schedule should be very carefully drawn with a view not to discourage employment, but merely to protect the company from the acts of a workman whose physical condition is a menace to himself, to others or to property.
3. Upon the return of an applicant's examination from the doctor, the head of the department should check it against this schedule and if none of the disqualifying defects appear, the applicant should be put to work.
4. Whenever the head of a department rejects an applicant for failure to meet the standards of the department, he should furnish the applicant with a copy of his examination as a public health service.
5. The following defects should disqualify a man from employment in any department:
   (a) any communicable disease,
   (b) venereal disease,
   (c) acute Bright's disease.

VII. The company should pay the cost of all examinations.

VIII. The initial examination should be used also for the Employees' Beneficial Association, and all new employees should be urged to join this organization.

IX. In cases of transfer of an employee from one department to another, and in cases where an employee is subject to call for occasional or part-time work in another department, the head of each department should have a copy of the employee's latest examination.

1. The employee's physical fitness for the new work should be determined according to the standards of that department.

X. In case an employee leaves the service for reasons other than physical disqualification, and presents himself within a year for re-employment, he may be taken in without examination.

1. He should be re-examined on his next regular date as though he had not been out of service at all.

XI. All present employees should be examined as a matter of record.

1. In case a present employee is found to have a disqualifying defect, the following procedure is recommended:
   (a) The employee should be examined by two other competent licensed physicians.
   (b) If the findings agree, the head of his department should transfer him to other work in the same department, if possible.
   (c) If this is impracticable, his case should be referred to a board to consist of representatives of the employees and the management.
      1. This board should be under the direction of the personnel officer.
      2. It should be empowered to submit a recommendation to the manager as to the equitable disposition of the case.

XII. All physical examination records should be kept in a centrally located file.

1. The head of each department should have records of the men in his department available at all times.
2. With this exception these records should be considered strictly confidential.

XIII. A plan should be worked out before the inauguration of this program that will provide for its presentation to all employees in such a way as to secure their full cooperation.

1. As a detail of this plan, the heads of departments should submit to examination first, the foremen second, and the men last.

New Method of Financing Electric Homes Adopted in San Diego

A new plan for the financing of a model electric home for display purposes has been adopted by the electrical industry of San Diego. The electric home is being sponsored by the electric club of the city.

The plan as adopted in San Diego was found to be effective when tried in Tulsa, Okla., and entails the cooperation of the Junior Chamber of Commerce of San Diego. This organization is to finance the building of the home through the sale of tickets, which will provide admission to the home. The Junior Chamber of Commerce will sell the tickets and use the proceeds to send delegates to a national convention. It is expected that the proceeds also will cover the cost of erecting the home.

After the home has been on display for two weeks it will be awarded to some contributor to the fund in the same manner that automobiles are awarded at fairs. The responsibility for the underwriting of the costs of the home has been accepted by the commercial organization.

The electric club will provide the electrical equipment in the home and will be responsible for the exhibition of the display after it has been completed. A full line of electrical devices will be installed in the home which is to be wired for complete electrification. Work has been started on the erection of the home which will cost about $12,500.

America's Highest-Head Hydro Plant to Be Built on Kings River

ERECTION of a hydroelectric power plant which will operate under the highest head of any plant in America is to be started in the near future by the San Joaquin Light & Power Corporation. This development is the Balch plant, which is to be erected on the Kings River in central California and will be the first unit of a series of hydroelectric plants to be placed on that river by the utility. The original installation in the Balch plant will have a generaing capacity of 28,250 kw., and provisions will be made for the addition of five units.

A hydroelectric power plant to be operated under an ultimate static head of 2,470 ft.—a head greater than that of any plant now developing electricity in America—soon will be in process of construction by the San Joaquin Light & Power Corporation, Fresno, Calif. The announcement made March 26 by A. Emory Wishon, vice-president and general manager of the company, that official sanction had been given to the erection of the Balch plant on the Kings River in central California forecasts the eventual fulfillment of the San Joaguin company's plans for a chain of hydroelectric plants on that river. The Kings River project, as outlined by the company, contemplates an expenditure of $50,000,000 in the development of power. The first plant, named in honor of A. C. Balch, one of the pioneers of the San Joaquin company, will be the biggest construction undertaking of the company since the erection of the Kerckhoff plant on the San Joaquin River. Jan. 1, 1927, is the date set for placing the plant in operation.

Engineering plans and preliminary details are practically complete. About $1,500,000 and five years' time have been spent in preliminary surveys, road building and in erecting a tower line to supply the construction camps with electric power. A short stretch of road remains to be completed between Balch Camp and the power-house site. It is expected that as soon as this is completed materials will begin arriving at the job so that actual construction work on the plant may be started.

H. K. Fox, who will be construction superintendent, has been the chief engineer of the project for several years and is thoroughly familiar with every detail incident to the construction of this string of plants. This fact is one of the salient reasons why there will be no delay in getting the project actively under way. In fact, Mr. Fox when interviewed stated that "work started at 8 o'clock the morning of March 26."

Highest Head in America

The Balch plant will operate under an ultimate static head of 2,470 ft., which will establish a new American record. There are, however, plants in the Swiss Alps with heads almost twice that planned for the Balch plant.

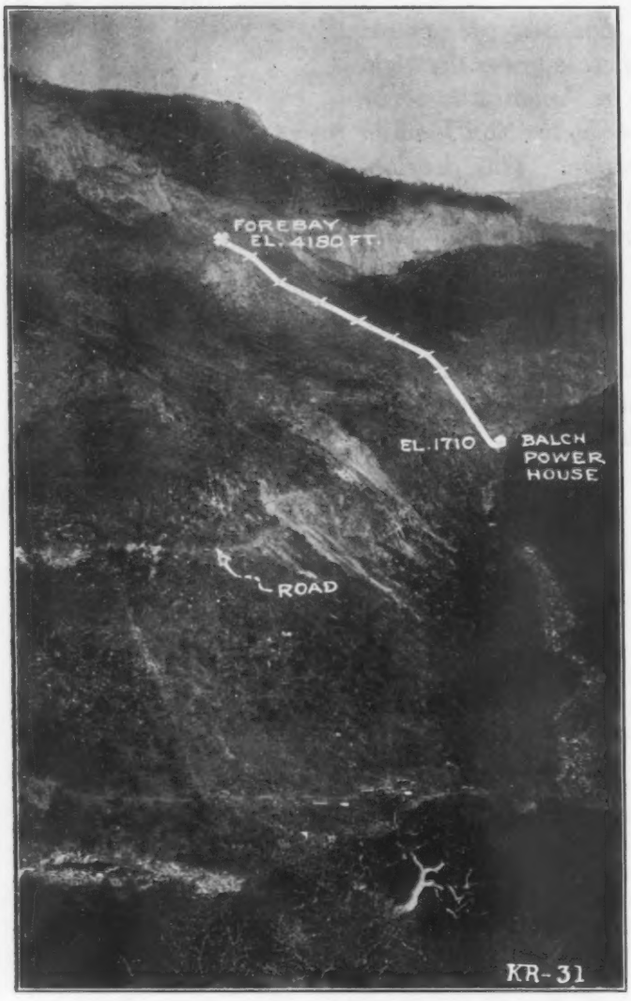
The present development is to provide for only one unit. Others are to be added as load conditions warrant. The initial dam is to be located at Williams Crossing and will be a concrete gravity structure having a free over-fall. The height from base to crest will be 65 ft. and the length at the crest 190 ft. It will form a 200-acre ft. surge pond and serve primarily only as a diversion dam. This will make available for power purposes the stream flow of the North Fork of the Kings River. As other units are necessitated, it is planned to absorb this initial structure in a larger dam to be constructed upon the same site. This larger unit is planned to be either a rock-fill or a multiple-arch dam 175 ft. high with a crest 800 ft. long. The site is ideal for the purpose, and is of such nature that the ultimate spillway may be located at the north end of the dam and the spill water carried down over the brow of the hill. The elevation of the crest of the diversion dam will be 4,065 ft., which will provide an initial effective head of 2,280 ft. and static head of 2,355 ft. The ultimate structure will raise the elevation of the spillway to 4,180 ft., increase the heads to 2,312 ft. and 2,470 ft., respectively, and create a 5,000-acre-ft. surge basin.

Major available storage sites further up in the mountains provide the possibility of future storage developments to the extent of 230,500 acre-ft. Lake Wishon at an elevation of 6,550 ft. can impound 128,000 acre-ft., while Lake Helms at an elevation of 8,170 ft. may be brought to a capacity of 102,500 acre-ft. Three intermediate power houses are projected to make use of this additional head some time in the future.

The tunnel from Williams Crossing to the Balch plant site will be about 19,500 ft. in length and 12 x 12 ft. in cross-section. This dimension will care for the ultimate development of this plant and will carry 720 sec.-ft. A slope of 3.3 ft. per 1,000 ft. of length has been selected as adequate. The approximate elevation of the tunnel intake is to be 4,030 ft. This will provide sufficient head at this point to overcome intake losses. Two adits will be driven 8,420 ft. apart at convenient places to provide a total of six working faces. No lining is expected to be necessary as the material through which the tunnel is to be bored is apparently solid granite.

A penstock of about 4,700 ft. slope length will be required to connect the tunnel exit at El. 3,966 ft.

with the nozzles at El. 1,710. These figures make apparent the steepness of the penstock. The upper 3,500 ft. of the penstock will be a single pipe while the lower 1,200 ft. will be split into two pipes on account of the pressures encountered. Penstock diameters will vary from 58 in. at the upper end to 26 in. at the lower. The thickness will vary from 3/8 in. to 1 1/2 in. Where the thickness is 3/4 in. or



View of the King's River Canyon (North Fork) shows schematically the location of Balch power house.

less riveted pipe will be used while lap-welded pipe will be used for the heavier sections. The weight of one penstock complete will total 1,664 tons of steel.

Balch power house itself will be built on the unit plan. The first unit will be sufficient to accommodate one 28,250-kw. generating unit, with provisions to facilitate the addition of the later units without interfering with the operation of the original equipment. The planned ultimate capacity of the plant is six units of the above size. Double-overhung, single-jet impulse wheels will drive the generators. Power will be generated at 11,000 volts and stepped up for transmission at 110,000 volts over a 39-mile line which will tie in with the existing San Joaquin system at Sanger substation, 12 miles east of Fresno.

Topographical conditions are such at the powerhouse site that it was necessary to place the plant on the opposite side of the river from the penstocks. There is no place large enough to accommodate the plant immediately at the foot of the penstock while across the river there is ample room. However, this introduced several peculiar features. The penstocks will be carried across the bed of the stream in heavy reinforced-concrete anchorages. Having the penstocks enter the plant from the river side means that the tail race will have to be constructed to care for the water without any back-washing effect and at the same time without undue erosion on the hillside back of the plant.

All materials will have to be hauled from the railhead at Piedra over country and private roads a distance of about 30 miles to the plant site and 40 miles to the dam site.

Twenty Years Ago

April, 1905

An Excellent Transmission Record

In its three years of operation the Northern California Power Company has suffered service interruptions aggregating two hours and fifty-four minues, not one second of which occurred at the power house. These interruptions were due to an eagle and a goose short-circuiting the line and to a flood in the Sacramento River which washed out a pole supporting the transmission span across the river.

Secretary Herbert Fleishhacker of the Truckee River General Electric Company announced that that firm will install a 1,500-kw. generating station on the Truckee River for the purpose of furnishing power on a ten-year contract basis to the mines of the Comstock Pumping Association.

The Benjamin Electric Manufacturing Company, of Chicago and New York, after making a thorough investigation of the remarkable development in the Pacific Coast field, has added San Francisco to its list of district offices with F. H. Ross in charge of headquarters in the Crossley Building.

The Abner Doble Company of San Francisco is building three 7,500 hp. wheels for the Electra plant of the Standard Electric Company. Two of the units will be connected to a 4,000-kw. generator forming a double unit for utilizing water from two separate sources under different heads. Either wheel is capable of driving the generator at full load. Two 800-hp. wheels have just been completed for the Santa Ana No. 2 plant of the Edison Electric Company of Los Angeles. Two 75-hp. exciter wheels have been built for the Pikes Peak Hydroelectric Company of Colorado to operate under a head of 2,100 ft., the highest in the United States.

A Central Station Load-Building Appliance Campaign

By A. Strauch
Electrical Heating Engineer, San Francisco

CERTAIN predetermined policies in merchandising appliances caused the two electric service companies described in this article to adopt an unique method of selling electric ranges, water heaters and other heavy domestic appliances. A capable sales force was organized; it worked in cooperation with contractors and retailers and at the same time produced remarkable results. In one year approximately 3,000 electric ranges were sold, and the total load added to the lines as a result of continuous sales effort has amounted to nearly 100,000 kw. The methods followed are outlined in this article.

THIS sales campaign is one which for some three or more years has been a consistent load-builder for two of the major power companies of California, both operating in part in the same territory. The same general plan is followed by both companies although there is no collusion in the execution of the sales effort nor has there been in the formation of the details of the plan. Local conditions have shown both companies that the best results can be obtained by following the general details as outlined in this article. The first step in connection with the decision to merchandise was to decide upon the extent to which it was considered desirable to enter the field of retailing. The next step was the determination of the devices to be sold, and the last major consideration was the organization of the sales force.

In general, local conditions seemed to warrant only a limited participation in the merchandising field. It was considered that on account of the fact that the dealers and contractor-dealers were doing a very fair job at selling small appliances—those commonly known as lamp-socket devices—and due to the desire to strengthen relations between the company and the retail trade, the attention of the central station should be directed only to the heavier devices such as electric ranges, water heaters and air heaters (of one kilowatt capacity or greater). Some few auxiliary devices, necessary to the proper operation of an electric appliance, were also included in the list of merchandise offered for sale. These devices were such as hot water tanks, household boilers, necessary for the operation of a water heater (and the insulating cover for same); limiting valves for reducing the amount of water to be kept up to temperature, and thermostats. Heavy-duty kitchen equipment was also listed, but it was generally preferred to have these sales go through dealers or those who made a specialty of this class of equipment. Information was supplied gladly to all inquirers, and the prospect was generally put in touch with the dealer. This method of procedure was followed on account of the usual need for special wiring on all such installations and also on account of the desire for better relations with the dealer or contractor.

The equipment listed for sale included that of the standard manufacturers, and, in general, only those devices were listed that had been proved to be satisfactory, either in general use before the start of the sales effort or by actual test by the central station. From time to time new devices were accorded the listing privilege but only after satisfactory evidence that the device would give a good service record. In some instances manufacturers endeavored to take special steps to have their equipment listed, but the policy in this regard remained unchanged, and if any device showed service defects of sufficient proportion or frequency that device was withdrawn from listing. This stand was taken from no arbitrary viewpoint but was purely for the purpose of giving to consumers the most satisfactory equipment from a service standpoint.

Organization of Sales Force

The sales force was organized along divisional lines. The head office formulated policies, determined lines to be handled and supervised the hiring of salesmen, but in the final analysis the division manager was looked to for results and was held accountable for the successful operation of the plan. This was an advantageous arrangement, as it placed responsibility for territorial conditions within the territory itself and had the further advantage of increasing the local division interest. It also permitted of closer contact between the consumer and the company official staff due to the fact that the division manager was advised of every transaction and, generally, of all prospects. This form of organization also proved of value in developing load other than that on which the prospect was originally solicited, and it has happened often that a prospect for a range only has been developed into a purchaser of equipment for an all-electric home; or has changed from a fuel pumping system to an electric; or has increased the use of electrical equipment in his home or business.

Salesmen secured prospects from many sources. Building reports, house-to-house calls, counter sig-

natures, reports from friends, subdivision operators, contractors, architects and almost countless other avenues were opened up for the securing of names of people who either were interested immediately or whose interest could be developed. Various forms of follow-up were employed, dependent in some cases upon the distance from headquarters to the prospect's residence (many of the best prospects lived in the country, in some cases as much as forty or fifty miles from the division office), but in general the personal call was most productive of results. In very few instances were sales made on the first call; occasionally the sale was not made for a year. However, it has been found that a persistent follow-up of those people who had the necessary money to pay for the equipment has produced gratifying results. In order to make easier the purchase of the equipment the companies instituted term-sales policies, these terms varying somewhat in detail for the different companies but in general allowing the buyer to take a year, or longer, to complete his contract, with an initial payment of twenty per cent or greater. No interest was charged on deferred payments, and the charge for the additional wiring required for equipment operation could be included in the term price.

Price Concession

On account of the fact that dealers generally had not produced in some years a notable volume of electric range and water-heater business, and because of the pioneering feature of this particular effort, it was decided to sell this equipment at special prices somewhat below manufacturers' list. Provision was made, however, so that a dealer could handle a sale and still make a profit. In brief the selling policy is as follows: The central station buys ranges, for example, in carload lots and warehouses them at division points, delivery to consumer or dealer being from the nearest point. To consumers the price quoted was net but to dealers the price was f.o.b. shipping point. To establish the selling price the companies adopted a differential above cost that allowed the dealer a profit of twenty per cent on the selling price of the equipment. To care for the special wiring generally required—unfortunately the majority of houses are wired for lights only, and often not adequately wired even for that purpose—the central stations arrived at the average cost of installing a range over their entire systems. This cost was then added to the selling price of the range, and the consumer was quoted accordingly, being told at the same time that he could buy the range not installed at a price lower by just the installation charge and then have the installation done privately. In only a small percentage of cases was this done, as consumers recognized that the central stations were dealing fairly and were not making a profit on the installation. In many cases, in fact, the installation actually cost more than the flat charge made for that purpose. In such cases the excess was absorbed by the central station. In no case did the power company do the installation wiring, this always being let out to contractors or contractor-dealers on competitive bid. In those cases where a prospect originated with a dealer no competitve bid was sought; if the dealer wanted to take over the sale and handle it to completion he was at liberty to do so, the central station selling him the range at cost.

Dealer Cooperation

All sales of listed equipment were made to dealers at the company's cost and no equipment was sold, either to consumer or dealer, that was not listed. The price on time sales was about 11 per cent higher than that for cash, but a purchaser was allowed to complete payment any time within the contract period and to deduct 10 per cent from the upaid balance at time of settlement. A high percentage of sales has been made on a time basis. An increasing number of sales is being made through dealers who have awakened to the sales possibilities of this equipment and to the fact that such sales lead to others. Dealers, however, frequently advance the argument that the 20 per cent margin is not sufficient, but they generally recognize the fact that they cannot afford to stand the high sales cost that attends the handling of this type of equipment. The situation seems to be fairly satisfactory, and it commonly is felt that as soon as expedient the central station will retire from the merchandising field and leave to the dealer a clear path for continuing this effort. Past history perhaps is not a sufficient precedent for judgment, but it records clearly that dealers have not developed the electric-range and water-heater field. For that reason alone central stations have felt justification for at least laying the foundation for the continuation of this work. Pioneering of appliances is a logical function of the central station and until the range is accepted by the public the power company must bear the burden.

In addition to the foregoing, displays were made at the state and county fairs in the shape of model kitchens, and demonstrations of electric cooking were held in women's clubs and other places about the systems. All of this attracted considerable attention and assisted materially in creating interest and securing prospects.

Results of Campaign

The campaign above outlined in its execution has been very successful. Sales of ranges in one year have amounted to more than three thousand, and these sales have brought the sale of about one-half as many water heaters. In addition to these items, there have been added thousands of electric air heaters of one kilowatt or greater capacity, and this sales effort has brought about the electrification of many homes. The territory served by these companies is thickly dotted with all-electric homes, and the additional load on the lines due to this campaign amounts to more than 100,000 kw. All of this load has been taken at an attractive rate and under load conditions that are very favorable. The campaign has shown, above all else, the value of continued and persistent sales effort as opposed to spasmodic, intensive drives. Also it has proved of value in the matter of public relations, for the salesmen have been able to establish close contact with the consumers and have very frequently been able to iron out difficulties and to strengthen good will.

What Classes of Consumers Are Good Range Prospects?

A DEFINITE basis for determining who shall be considered a good prospect for the purchase of an electric range has been worked out by the California Oregon Power Company. The method, which is based on the assumption that any consumer using over $2 worth of electricity per month for lighting and small appliances is a prospect, has worked out to the satisfaction of the company. The prospects secured in this way have been turned over to local contractor-dealers, who with the assistance of a letter campaign by the power company complete the selling work.

THE question as to who shall be considered as a good prospect for an electric range has been worked out by the commercial department of the California Oregon Power Company on a basis which has obtained satisfactory results.

The plan as worked out by the company calls for the grouping of residential consumers according to their average consumption of electric energy for lighting and small appliances. After this grouping has been made, the class using over a predetermined number of kilowatt hours during the six-months period from which the average is taken, is considered to include only those who are potential electric-range prospects.

In preparing a base for its grouping plan, the California Oregon Power Company decided that any residential consumer having an average monthly bill of $2 or over could be considered as a person to whom an electric range might be sold. Having once determined that a customer who paid an average monthly bill of $2 or more for lights and small appliances was a prospect, the company set about the acquiring of data on the average consumption of an electric range. An analysis of the consumption of 500 electric range customers, taken at random, shows an average monthly use of 161 kw-hr. for cooking, lighting and small appliances. Assuming that the average consumption of the lights and small current-consuming devices was 20 kw-hr. per month, the balance or 141 kw-hr. could be charged against the electric range. Carrying the analysis of the electric-range consumption farther, the company found that The Society for Electrical Development estimated the average monthly consumption of an electric range being used for a family of 4.2 persons was 125 kw-hr. To be on the safe side of the question the commercial department of the company determined to estimate the monthly consumption at 150 kw-hr.

Having made the decision as to what should be considered as the class of customers who might be interested in the purchase of an electric range, the company next set about preparing a merchandising plan to reach this class. The lighting, cooking and heating schedule of the utility was taken into consideration, and from this typical monthly bills were prepared. Taking the average consumption of 161 kw-hr. where an electric range was used in the home, the monthly bill was found to be $5.62 in the Oregon territory. After deducting the average of 20 kw-hr. per month that was considered to be for lighting, the charge for cooking was $3.42. The rates in the California territory served by the company are slightly different and will not be considered here.

A study was then made of all lighting consumers' accounts, using the consumers' ledger and, using the average kilowatt-hour consumption from Jan. 1 to June 30, those customers whose bills amounted to $2 or over were noted. The average consumption of each of these customers was determined, and an individual study was made of each case. Then a letter was written to each of these customers stating that the average consumption was a certain number of kilowatt-hours, for which the charge at the lighting rate was a definite amount and that for a small additional amount the customer could have the benefit of electric cooking in his home. Typical average monthly bills of twenty consumers and the additional cost for 150 kw-hr. for cooking purposes are shown in Table I.

Table I. Showing average kilowatt-hour consumption for lighting and small appliances; average bill for same; and additional cost for 150 kw-hr. for cooking.

	Average kw-hr. consumption	Average 6-mo. bill per schedule O	Additional for 150 kw-hr. per schedule R
Customer No. 1	26	$2.80	$3.12
Customer No. 2	39	4.10	2.08
Customer No. 3	29	3.10	2.88
Customer No. 4	36	3.80	2.32
Customer No. 5	32	3.40	2.64
Customer No. 6	20	2.20	3.60
Customer No. 7	27	2.90	3.04
Customer No. 8	26	2.80	3.12
Customer No. 9	25	2.70	3.20
Customer No. 10	25	2.70	3.20
Customer No. 11	47	4.90	1.44
Customer No. 12	19	2.10	3.68
Customer No. 13	19	2.10	3.68
Customer No. 14	26	2.80	3.12
Customer No. 15	28	3.00	2.96
Customer No. 16	26	2.80	3.12
Customer No. 17	23	2.50	3.36
Customer No. 18	23	2.50	3.36
Customer No. 19	21	2.30	3.52
Customer No. 20	39	4.10	2.08

The letters were sent out by the district managers of the company and showed a personal interest

in the welfare of the consumers in each manager's territory. The letters were of course subject to change to meet individual conditions. A sample letter used by the company reads as follows:

Mrs. John Smith,
Medford, Ore.,
Dear Mrs. Smith:

Many of our lighting customers have been interested in knowing that for a comparatively small extra cost monthly, a wonderful saving in the kitchen work and cooking results can be made. We have taken the time to look up your personal account and find that you have been paying us under Schedule O (Residence lighting schedule) an average of $2.10 per month for this service. An analysis of our combination lighting, heating and cooking rate (Schedule R) shows that for the additional sum of $3.68 per month you can have the same service for lighting and sundry small appliances also 150 kilowatt hours of current for cooking each month. This amount of current is a trifle more than the average which is being used for cooking each month by the families who have this service in our territory.

Can you buy the fuel you are now using and take care of the ashes, build the fires and do many other things that are necessary with the use of coal or wood for $3.68 per month? We will be glad to talk this over with you at your convenience. We feel sure that we can prove to you conclusively the saving we can make for you.

With kindest regards, I remain
Yours very truly,

Division Manager

At the time that the letters were sent to the consumers, copies were mailed to the contractor-dealers in the city in which the prospect lived. As the company does not merchandise electrical equipment of any kind the follow-up on this direct-by-mail campaign was left to the contractor-dealers.

Personal Solicitation Employed

The information regarding the additional advantages that were awaiting the housewife who would install an electric range was well accepted by the people reached by the letters. Personal solicitation by the contractor-dealers in the territory was used to interest the prospects still further and demonstrations of the efficiency, cleanliness and ease of operation of the electric range were given to increase sales. The combination lighting, cooking and heating rate undoubtedly had a considerable bearing upon the success of the campaign to increase the use of electric ranges.

In addition to giving the contractor-dealers the names of the prospects that it had secured, the central station prepared an electric-range manual designed to present to the range salesman the correct method of approaching the prospective customer. This book outlined the best talking points of the electric range and stressed the point of selling the "idea" rather than the range as so much metal. Better cooking, easier cooking, and cleaner cooking were suggested as the high spots in the salesman's talk.

The operating costs of the electric range were presented in a series of tables giving the actual costs of preparing a series of meals using the oven to cook the food. One of the tables is as follows:

Actual time current is used to cook an oven dinner consisting of a 6-lb. roast of beef with two vegetables. Preheat oven for 15 min., as shown below:

Upper element on high for 15 min., 15/60 of 1,500 watts=	375 watt-hours
Lower element on high for 15 min., 15/60 of 1,500 watts=	375 watt-hours
Lower element on high for 10 min., 10/60 of 1,500 watts=	250 watt-hours
Lower element on medium for 1½ hr., 1½ x 375 watts=	1,125 watt-hours
Upper element on low for 1½ hr., 1½ x 375 watts=	562 watt-hours
Total current used	2,687 watt-hours or 2.687 kw-hr.

The cost to the average consumer in Oregon for 2.687 kw-hr. at 2c. per kw-hr. is 5.37c. Thus, the cost of cooking the dinner in the oven would be but 5.37c.

The data for the series of tables were prepared by one of the domestic-science experts demonstrating electric ranges in connection with electric-range cooking schools. The time tables were strictly followed by the instructor in preparing meals before the public.

Selling Water Heating

This range-sales manual also contained a section devoted to the selling of water-heating equipment. Every housewife that was considered a prospect for an electric range was also a potential purchaser of an electric water heater. To stimulate this use of electricity the company provides a flat rate for water-heater service where the water-heater and the range are connected with a double-throw switch, permitting only one to be on the line at one time. For this service in Oregon the flat monthly charge is 0.0035 per watt of connected load. Where the water heater is connected on a separate circuit there is a choice between a metered rate and a combination service and connected load charge.

Although The California Oregon Power Company does no merchandising it is deeply interested in the sale of all current-consuming devices. In addition to preparing the list of prospects for the local contractor-dealers, it buys electric ranges in carload lots and sells them to the dealers at cost. In this way the interest in the dealers in the sales of electric ranges is stimulated by the greater profit accruing to them through the lower cost per range. Central-station company salesmen assist dealers in making the sale of the ranges but do not definitely accept orders for any merchandise.

Results of Sales Effort

The method pursued in developing electric range and water-heater load has brought about a very considerable saturation. As of Dec. 31, 1924 the company had on its lines 1,676 domestic electric ranges and 293 commercial electric cooking and heating installations. The saturation for the entire system was something over 15 per cent of the domestic consumers; that is to say, something over 15 per cent of all domestic consumers served by the company cook with electricity. The degree of saturation varied considerably in the different towns, the lowest being something over 11 per cent and the highest nearly 28 per cent. During the year 1923, 250 electric ranges were added to the lines of the power company and during the year 1924, 373 ranges were added. The quota for the year 1925 calls for 560 new range customers.

Comparative Costs of Operating a Gas and an Electric Apartment

COST of operation is the specter which stands in the way of complete electrification of many homes. Despite the advertising dollars of the industry that have been spent to tell the public that electricity for cooking, for heating and for water-heating is more convenient, more satisfactory and no more expensive than other types of fuels, the idea remains that an electric home is an expensive luxury. Fully half a million people have visited the electric homes which have been displayed in the Western states, yet this idea persists. They are sold thoroughly on the various small appliances—the iron, vacuum cleaner, washing machine, percolator, toaster, waffle iron and other devices, and they are ready to believe that electricity is more desirable for the major household uses than other types of fuel on account of its dependability, cleanliness, efficiency, and ease of control, but they hesitate at complete electrification on account of the fear of high bills.

A comparison of the cost of fuel in the completely electrified apartment of George C. Tenney, managing editor, Journal of Electricity, and a similar sized apartment in which gas was used for cooking, water-heating and house-heating for the same number in the family shows such is not the case. In fact, the figures over the same period of time show a relatively small difference when the arguments in favor of electricity are considered.

TABLE NO. 1—Cost of Operation of Electric Apartment.

Meter Reading Date	Kw.-hr.	Amount
1923.		
April 3	614	$ 16.24
May 2	628	16.31
June 2	479	13.33
July 2	391	11.57
Aug. 1	253	8.81
Sept. 1	195	7.65
Oct. 2	246	8.67
Nov. 1	273	9.21
Dec. 3	434	12.43
1924.		
Jan. 3	562	$ 14.99
Feb. 1	584	15.43
March 3	450	12.75
April 2	269	9.13
May 2	401	11.77
June 3	84	3.99
July 2	174	7.14
Aug. 2	374	11.23
Sept. 2	420	12.15
Oct. 2	278	9.31
Totals	7,109	$212.11

Average monthly consumption ..... 374 kw-hr.
Average monthly bill $11.15
Average monthly bill, July 1, 1923, to Aug. 1, 1924 (period similar to gas apartment) $10.07

The electric apartment consisted of four rooms. There were installed a 6-kw. range,7 kw. in air heaters, a 5-kw, water heater and 6 kw. in lights and miscellaneous appliances, including a vacuum cleaner, two percolators, a waffle iron, a grill, a toaster, two irons, a radiant heater and other small appliances. There were three persons in the family. The rate applicable was the C-1 B-1 schedule of the Pacific Gas and Electric Company.

The gas apartment was chosen at random from the accounts of the Pacific Gas and Electric Company, the only conditions being that there should be the same number of rooms, the locality in San Francisco should be approximately the same and there should be the same number of persons in the family. The gas equipment consisted of a four-burner cabinet range, a gas water heater and a gas-fired furnace with four radiators. Electricity was used for lighting and for the operation of a few small appliances.

The monthly bills for the electrified apartment for the period March 1, 1923, to Oct. 1, 1924, are shown in Table I. The bills for the gas apartment for the period from July 28, 1923, to July 21, 1924, are shown in Table II. The entire fuel bill in the electrified apartment over a period of nineteen months was $212.11 or an average of $11.15 for 374 kw.-hr. of energy per month. The average bill over the same period as accounts are available for the gas apartment was $10.07. The difference is explained in the fact that the high bills of the first three months when experience was being gained in the regulation of the electric heaters are not included in the later period.

Table No. 2—Cost of Operation of Gas Apartment.

Meter Reading Date	Gas Bill	Electric Bill	Total
Aug. 24, 1923	$ 4.56	$ 1.27	$ 5.83
Sept. 22	5.06	1.78	6.84
Oct. 23	5.52	2.71	8.23
Nov. 22	7.64	2.54	10.18
Dec. 22	10.33	2.80	13.13
Jan. 23, 1924	16.17	3.31	19.48
Feb. 19	13.98	2.71	16.69
March 20	5.80	2.04	7.84
April 20	5.34	2.04	7.38
May 19	3.96	1.26	5.22
June 20	3.68	1.32	5.00
July 21	3.31	1.20	4.51
Totals	$85.35	$24.98	$110.33

Average monthly gas bill $7.11
Average monthly electric bill 2.08
Average monthly total bill 9.19

For the gas apartment the average gas bill was $7.11 and the light bill $2.08 or a total of $9.19. The actual money difference in favor of the gas-equipped apartment is 88 cents. However, there are certain incidental charges that do not appear in the fuel bills. The added convenience of the electricity can not be measured in dollars and cents. Cleanliness can. At the end of nineteen months the walls of the electric apartment were as bright and clean as at the time the apartment was first occupied. At the end of twelve months in the gas-equipped apartment the kitchen was repainted and the walls of one room retinted. This is only one of the many intangible arguments which might be cited in favor of electricity.

CENTRAL STATION CONSTRUCTION OPERATION AND MAINTENANCE

Baker River Pressure Tunnel Nears Completion

Pilot-Tunnel Method and Hand Mucking Used to Advantage in Driving 1,400-ft. Bore Through Limestone.

By W. D. SHANNON, Division of Construction and Engineering, Stone & Webster, Inc., Seattle.

The sketch map accompanying this article gives a general idea of the development which is being made on the Baker River in Skagit County, Wash., for the Puget Sound Power & Light Company. The work is being done under the direction of the Division of Engineering of Stone & Webster, Inc.

The first piece of heavy construction work was the driving of a diversion tunnel to take care of the waters of the Baker River during the construction of the main dam. A considerable portion of this diversion tunnel is later to be used for the main pressure tunnel, which will supply the turbines.

In order to speed up the driving of this tunnel, which is approximately 1,000 ft. in length, two adits were driven, known as adits A and B, respectively, the tunnel then being driven both ways from the points of intersection. A face was also given by the driving of the lower end of the diversion tunnel, so that altogether five faces were used during the driving.

The portion of the tunnel from the intake shown in the drawing to station 1+12.35 was driven 24 ft. in diameter, this being the diameter decided upon for the main pressure tunnel. The balance of the tunnel was driven with smaller cross-section, being 17 ft. high and 24 ft. wide, with a slightly arched roof.

The actual driving of adits and tunnel was begun the first week in May, 1924, and the diversion tunnel was completed Aug. 20, 1924. The tunnel was driven at just as low a point as possible so that the intake would divert all the water of the Baker River during periods of low flow with a very small cofferdam. The lower end of the diversion tunnel was therefore nearly at the bed of the river so that the water gradient of the tunnel was practically that of the river.

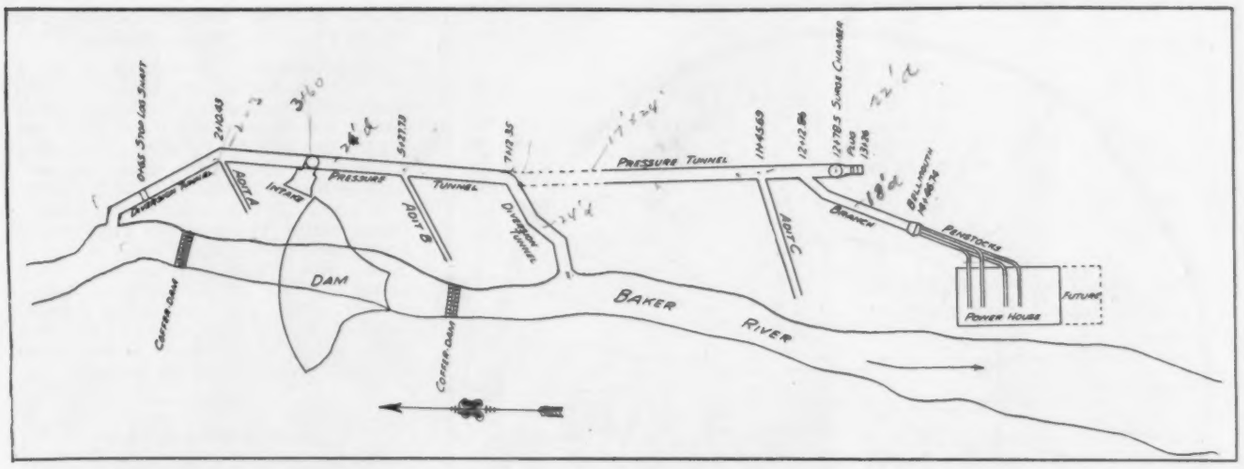
In order to make certain that the driving would be a continuous one, adits A and B had their portals some 30 ft. above the river bed. This made them slope adits and served to keep the water out of the tunnel when the river was high.

Immediately after the diversion tunnel was put into service, the driving of the balance of the main pressure tunnel between the diversion tunnel and the surge chamber and the power house was begun. On Feb. 5 there remained only 80 ft. of the main tunnel to drive and 100 ft. of the penstock tunnel to complete.

The surge chamber is located as close to the power house as possible, is 250 ft. deep and 22 ft. in diameter.

The main pressure tunnel, when completed, will be lined with a 12-in. ring of concrete, making a 22-ft. finished diameter, while the surge cham-

South heading from adit "C," pressure tunnel of Baker River Development of Puget Sound Power & Light Company. This photograph was taken Nov. 2, 1924, and shows the adit-entrance at the right, the hand-operated mucking equipment and the drilling apparatus set up in the 10-ft. pilot tunnel.



Sketch map showing scheme of physical layout of the Baker River Development.

ber will be lined with a similar ring, making it a 20-ft. finished diameter.

In driving the pressure tunnel it was found that costs could be kept at a minimum by drilling on one heading while mucking was being carried on at the other. Sketches given herewith show the drilling which was done on the large heading. It will be noted that a small pilot tunnel 10 ft. in diameter was driven in advance of the main tunnel, with the drill holes located as shown in the sketch.

The order of firing holes is indicated by the numbers opposite them, which are also the numbers by which the delay caps are designated; that is, No. 1 delay explodes first, No. 2, second, and so on. There are also four so-called "bulldog" holes shown converging near the center of the pilot tunnel. To these holes no numbers have been assigned. These four holes are fired instantaneously. Next come the No. 1, or cut holes. Then the No. 2, or relievers, followed by Nos. 3 and 4, the side or back holes, and last Nos. 5 and 6, or lifters.

At the same time that the pilot-heading charges are being fired as above outlined the rings are also being fired. The upper half of the first ring is fired with No. 3 and the upper half of the second ring is fired with No. 4. The lower half of the first ring is fired with No. 1 and the lower half of the second ring is fired with No. 6. The third ring is left for the next round.

Two bars are used in each heading with two drills mounted on each, each machine being manned by a driller and chuck tender.

With this method of firing, the muck is thrown well back from the heading onto steel plates laid on top of the rails of the track, leaving the heading itself nearly clear and making it possible to resume work in the heading just as soon as the gas has cleared. On account of the short length of the tunnel, it was decided to do all mucking by hand and the results have been very gratifying.

There are three narrow gage tracks laid down in the main tunnel so that three gangs of muckers can work at one time.

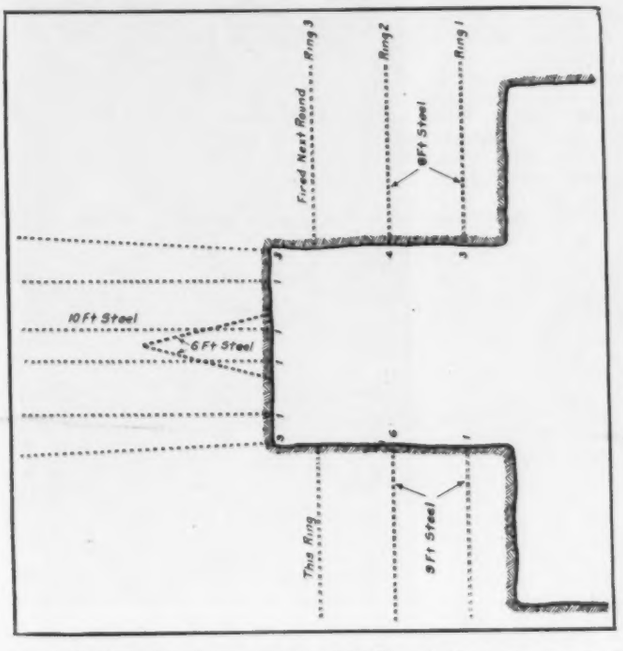
With this method of operation, an average of 7 ft. of completed tunnel has been driven each day. The rock is hard limestone with practically no seams in the entire length of the main tunnel, and breaks in one-man sizes and smaller, so as to be easily handled.

Hollow round steel 1¼-in. in diameter was used in lengths from 2 to 12 ft. and approximately 650 lb. of 40 per cent powder were used per round.

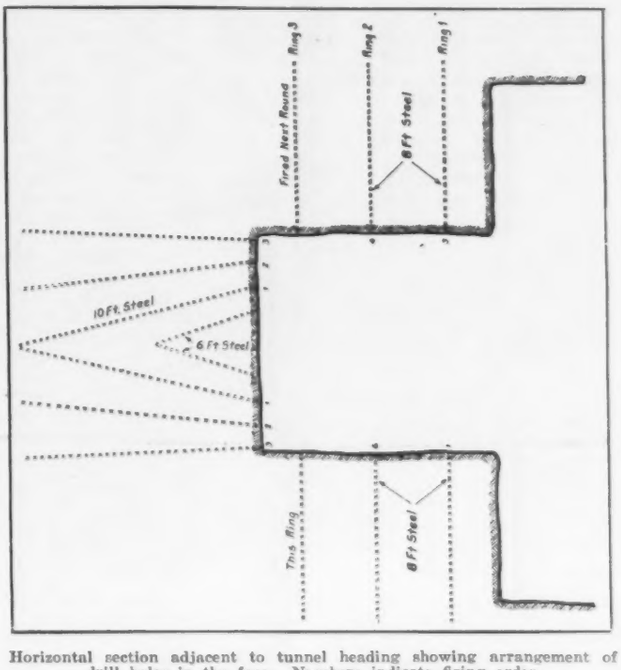
Loose Rotor Bars Well Repaired With Silver Solder

Severe starting conditions caused the loosening of the rotor bars of an induction motor in a certain industrial plant. While this particular item had caused no operating trouble, it was discovered when the machine was down for an overhauling. In correcting this condition silver solder was used to secure the bars in place.

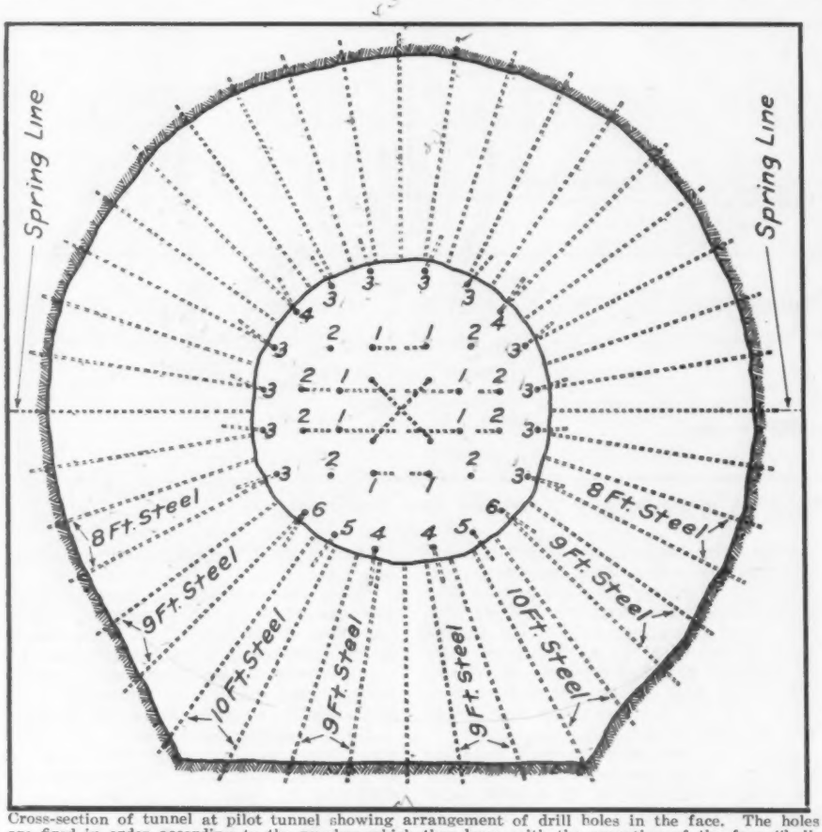
It is practically useless to use ordinary solder on rotors, as any severe



Longitudinal section adjacent to tunnel heading showing arrangement of drill holes in the face. Numbers indicate firing order.



Horizontal section adjacent to tunnel heading showing arrangement of drill holes in the face. Numbers indicate firing order.



Cross-section of tunnel at pilot tunnel showing arrangement of drill holes in the face. The holes are fired in order according to the number which they bear, with the exception of the four "bull-dog" holes at the center of the heading. These are fired together as a leading charge. Above the spring line, the first ring is fired with No. 3 and the second ring is fired with No. 4. Below the spring line, the first ring is fired with No. 1 and the second ring is fired with No. 6 (See page 249).

Bank Rating Increased 50 Per Cent by Water Spray

Three 100-kw. transformers at a small hydro station are installed above the forebay to serve a local load. Their rating was increased to 450 kw. total during the summer by simply installing a spray to play water upon the self-cooling ribs along the sides of the units.

A 1-hp., 110-volt motor drives a small reciprocating pump which pulls water from the forebay and forces it into a ¾-in. pipe running from the pump along the side of the bank of transformers. This pipe is drilled at convenient intervals to form a spray onto each tank. Most of the water is conserved by draining it back to the forebay.

You have not wasted —

— the courtesy you have shown a customer.

— the time you spent in worship.

— the effort invested in training your talent.

— the strength spent in lifting another's burden.

— the praise given a faithful associate.

— Oklahoma City Times.

Student: "What is a consulting engineer?"

Professor: "A consulting engineer is a practicing engineer out of a job."

— Engineering News-Record.

overload will cause the bars to heat and throw out the ordinary solder. It is comparatively easy to silver-solder rotor bars if the copper section is large enough to prevent melting the copper under the oxyacetylene flame. There is, however, one point to observe particularly. The copper must be absolutely clean before attempting to solder. In the case under discussion the cleaning was accomplished by suspending the rotor by means of a crane over a small tank of chemical cleaning compound which was kept boiling by means of a gas heater. The rotor was revolved in this cleaning solution, and all dirt, grease and foreign matter were removed quickly. After this careful cleaning process the silver solder was applied.

A New Use for Electricity.—A visitor in a San Joaquin Valley city recently reported having seen in the display window of a progressive appliance salesroom a sign worded as follows: "Don't kill off your wife—let electricity do it."

"Some of the things said over the wires," declared a telephone operator to a lineman making repairs, "are not fit for me to hear."

"Aw," declared the lineman, "you can't expect to work around electricity and not get shocked."—Flapper.

The reason some people do not recognize opportunity when they see it is because opportunity usually goes around looking like work.

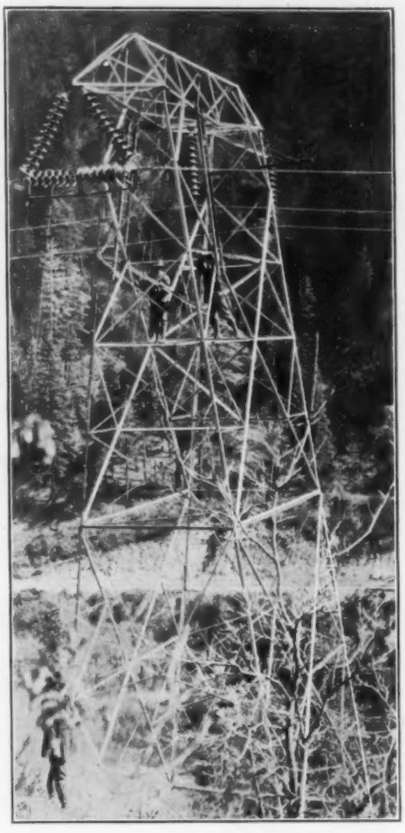
— B. E. Electric Employees' Magazine.

Magnetic Separator Preserves Combustible Material

In actual operating practice the amount of combustible material in boiler plant refuse may range anywhere from a few per cent to as high as forty or fifty per cent. In Europe magnetic separators have been used with considerable success. As high as 87 per cent recovery has been reported for these machines.

The principle behind the apparatus is that when coal is subjected to heat, the ash-forming constitutents tend to fuse together into clinkers quite separate from the unburned coal and coke. These clinkers are slightly magnetic because they contain all of the iron present in the ash. By crushing the boiler refuse to such a size that the bond between clinker and combustible material is broken, and passing the whole over a magnetic field, the clinker is retained by the magnet while the combustible material passes on.

A Sectionalizing Switch is installed about every 20 miles throughout the 200-mile length of the 165,000-volt transmission line between the Caribou plant of the Great Western Power Company of California and San Francisco. The sole object of these hand-operated, air-break switches is to facilitate the sectionalization of the line for purposes of testing when serious trouble occurs. The accompanying illustration shows a tower in process of being fitted with these switches. To facilitate the safe and quick handling of the switches, a platform is built on the tower about 10 ft. below the switch.



A tower in the Feather River Canyon on the Caribou line of the Great Western Power Company of California showing line-sectionalizing switches being installed.

Interior view of Moccasin power house of the city of San Francisco. The picture was taken Nov. 30, 1924 at the time hydraulic and generating units were being installed.

Insulator Tests Now in Progress at Oregon College

In cooperation with the overhead systems committee of the Northwest Electric Light and Power Association, the electrical engineering department of the Oregon Agricultural College, Corvallis, has recently commenced the insulator tests mentioned in the Journal of Electricity, Oct. 15, 1924, p. 302. These tests, which are being carried on by advanced students in electrical engineering as extra work outside of their regular courses, under the direction of Prof. F. O. McMillan, will take over a month to complete. It is expected that the data will be available as part of the report of the Technical Section of the northwest association this year.

Members of the association have been invited to visit the laboratory of the Oregon Agricultural College while these tests are in progress. Many members of the Technical Section have availed themselves of this opportunity, as have a number of the representatives of the manufacturers that had furnished insulators for the test. On Feb. 21, 1925, about sixty members of the Portland A.I.E.E and Northwest Electric Light and Power Association made up a party and chartered a special train for a day's trip to Corvallis to view the tests and to see the Annual Educational Exposition of the Oregon Agricultural College, which opened that day.

Electric Air Heaters Supplement Defunct Steam Heat

Electric heaters have solved one problem for the American District Telegraph Company. The Brooklyn, N. Y., office and the Portland, Ore., office of this company are located in high-grade office buildings, in which the steam heating systems are not maintained through the night period.

It is essential that the men on duty in these offices during the night shall be wide awake and alert to handle without delay any signals which may come in over the fire alarm, burglar alarm, night watchman and sprinkler supervisory systems operated by the company. It is obviously important, therefore, that no heating apparatus be installed which would tend to devitalize the air. Steam heat is of course entirely satisfactory where and when obtainable. However, in the cases mentioned the company has found that electric air heaters assure the proper air conditions during the night.

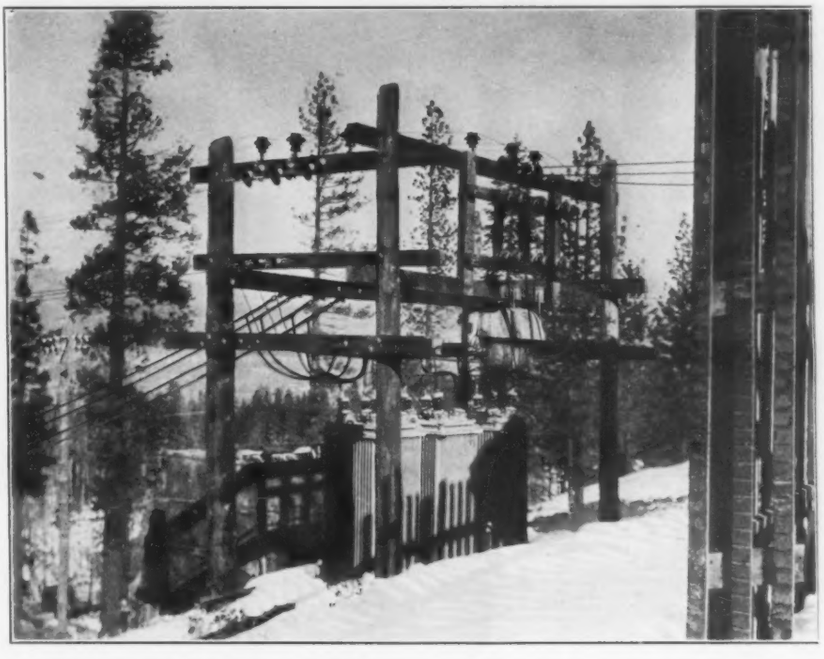
It is interesting to note the moderate heating capacity required. In the Brooklyn office a room 20x35x12 ft. is kept comfortable during the coldest night by the use of two 2,000-watt heaters. The Portland requirements are not so severe. These heaters have made possible the operation of the "graveyard" shift under conditions parallel to those under which the more fortunate employees work.

New Factory Is Being Built by Chicago Manufacturer

A new factory designed to facilitate the manufacture of potheads and boxes has been erected by the G.&W. Electric Specialty Company at 7780 Dante Avenue, Chicago. The new building contains approximately 30,000 sq. ft. of factory space and about 3,000 sq. ft. of office space. The new building is the first unit of the company's construction program, and on one side the wall is of temporary nature. The cost of the structure will be about $110,000.

The factory layout has been designed to speed up production by the elimination of unnecessary travel during the various processes. Portable assembly benches which are transported by means of elevating trucks, will be used in the factory. The company believes that by using the sectional assembly benches the actual handling of materials may be lessened considerably.

An Outdoor Distribution Substation located where it suffers all of the weather conditions imaginable is shown in the accompanying illustration. The capacity of the substation is 1,200 kw. at 15,000 volts on the high side and 440 volts on the low side. Its purpose is to supply the current necessary for light, heat and power at Camp 61 on the Florence Lake tunnel project of the Southern California Edison Company. The elevation is somewhere near 7,500 ft.



A mountain substation serving construction work at Camp 61 on Big Creek project.

IDEAS FOR THE CONTRACTOR

Standardized Panel Switchboard for Pumping Plants Urged

By E. S. CONRAD
Square D Company, San Francisco.

Electrical installations in districts that come under the active inspection and supervision of municipal or state authorities are generally comparatively safe and generally economical for the user. Beyond the bounds of these districts the electrical contractor's conscience is more or less his only guide or law.

The tremendous field, particularly in these Western states, for the use of electricity for the supply of water in the agricultural districts, requires the installation of hundreds of pumping plants, large and small, every year. Nearly all of these installations being in the districts not under the direct and active inspection of state or municipal inspectors, the general standard of electrical construction, unfortunately, has been in many cases relatively low. It will not be necessary for those electrical contractors or irrigating pump manufacturers or their engineers to concentrate seriously in order to visualize perhaps a great many irrigating pump electrical installations that are far below the standards of good work. Those who made these installations are not proud of them. The rough haphazard boards leaning, possibly in a faltering manner, against the wall of a frail pump house covered with a tangle of wires and open current-carrying parts is not a safe or economical installation for the man who paid out his good money for that job. It certainly is not a credit to the man who installed it.

In the outlying districts where so many of these pumps are installed each year the reputable contractor's responsibility increases more than elsewhere. Are the electrical men who are going to install these pumps this year going to assume that responsibility? Whether these installations become more safe and economical for the owner depends greatly upon the stand taken by the electrical contractor who does that work. If these improper installations are to stop, the electrical contractor must do his share towards bringing about that betterment. There may have been some justification for rough boards and tangled wire several years ago, but there is little justification and little excuse for that class of work today. A few of the reputable installers of this class of work have realized that this condition must change and have made an effort to standardize and build a pump panel of greater reliability and greater safety.

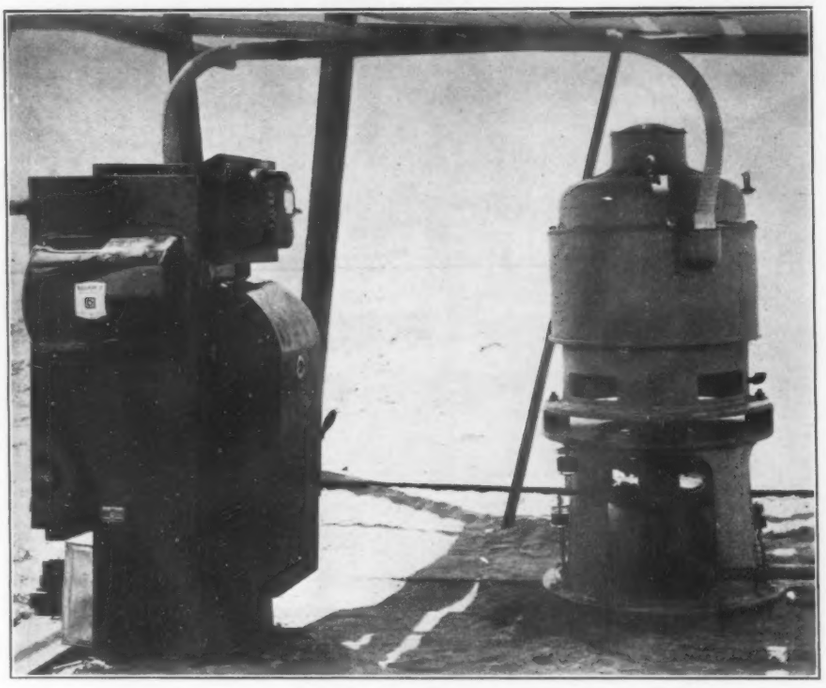
The manufacture of such board was carried out only in a very small way until about two years ago. At that time W. R. Mongerson of the Mongerson Electrical Machine Works at Bakersfield, Calif., saw the possibility of a high-grade standardized board which could be sold through the contractor. This company was equipped to manufacture these boards of the highest type construction. It turned out a few and placed them with various electrical contractors and was greatly encouraged by their enthusiastic reception and demand.

The average contractor-dealer is in the wiring business and is not ordinarily equipped to build a high-grade pump panel at a reasonable price. That is a specialty and a function for the manufacturer. As the demand increased for these better type of pump panels, it became known more widely that a board of this type that would compete with the other type was available at a reasonable figure. The demand for this type of board increased tremendously. Special equipment was installed for the manufacture of these panels, and the plant capacity increased. The Mongerson company is now specializing on boards of this type, and the constantly increasing demand has made it possible to produce a really high-grade pump panel at a relatively low figure which will well compare with what it will cost the average electrical contractor to build a few boards a year in his own shop.

The Mongerson board is a self-contained panel entirely built up of the highest grade type safety switches and starting equipment. Boards to control 7½ hp. motors and under are equipped with low-voltage release and overload relay and starting equipment of the push button type. The larger sizes may be equipped at the plant with the compensator which is furnished by the contractor or shipped without the compensator which may be quickly installed on the job. The panels are completely wired ready to install and approved on the lines of any central station. The main switch is provided with meter test sockets so that the power company may make frequent load tests without interrupting the customer's service. The panels are of a heavy gage steel rigidly supported and electrically welded. They are well finished and present a pleasing appearance.

The distributing and marketing policy in connection with this product has been designed to protect the contractor-dealer. It is intended that this device be sold entirely through the channels of the contractor-dealer. The boards are not installed or sold direct by the manufacturer except where it is impossible to have them handled through the dealer, and then only at a price which leaves a possible margin of profit for a dealer.

As has been said, these boards are completely wired, and it is only necessary to connect the service wires to the entrance switch and run the leads from the starter to the motor. Quite often when the user decides that he wants a pump installed he wants it without un-



A modern installation by the Peerless Pump Company using a Mongerson panel board.

necessary delay. Immediate installation is a factor in favor of the contractor who is able to give immediate service.

These boards may be carried in stock and one or more on the show-room floor affords one of the most tangible and best selling arguments the contractor could use. It is possible to sell the job complete and be in a position to give the customer a connection without delay.

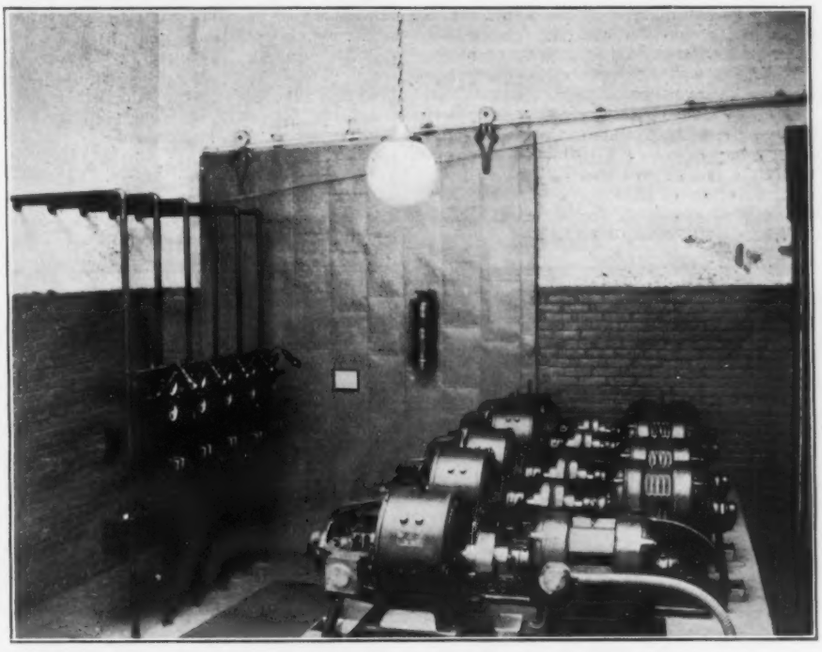
Battery Charging Outfit Installed by Los Angeles Store

The Broadway Department Store of Los Angeles, Calif., has built up a remarkable installation of small motor-generators for charging the batteries of their fleet of electric trucks operating throughout Los Angeles and Hollywood. The unusual feature of the installation is that, instead of having one large motor-generator for supplying the necessary current, the outfit consists of five 10-kw., 250-volt equipments, each capable of taking care of two trucks at a time. These equipments, which were built by the Westinghouse Electric & Manufacturing Company, have complete automatic features and do not require the supervision of an operator. Their great advantage, however, lies in the fact that the installation is flexible and can be increased as the number of trucks operated by the company is increased, thus distributing the first cost of the battery charging equipment over a long period of time. The Broadway store started their electric fleet two and a half years ago with two trucks and one motor-generator charging set. The fleet has since been increased to eight 1-ton and two 2-ton trucks and the charging equipment to five motor-generators. The 1-ton trucks have Edison 60-cell A-6 batteries, while the 2-ton trucks have Edison 60-cell A-8 batteries.

The five Westinghouse motor-generators are installed in a separate room in the garage and protected by fire doors from any dust and dirt from the main room of the garage. They are mounted on a raised concrete platform, about 3½ ft. high, and are easily accessible for inspection or repair. The platform has been built to accommodate ten equipments, and conduits are run through the concrete for connection to that number.

Each generating unit is controlled from a conveniently located panel mounted in the same room. The control is so designed that a motor-generator can be started by merely pushing a button and from then on the entire operation is automatic. In case of the failure of a.c. power, a control relay on the panel disconnects the battery from the generator circuit. When the a.c. power is resumed, the set automatically starts up again and puts the battery on the line. As soon as the battery is fully charged, it is automatically disconnected and the motor-generator stops, thus doing away with the services of an operator for anything other than connecting the leads to the batteries and starting up the generating apparatus.

The Broadway Department Store garage, in which this apparatus is installed, is particularly well kept and completely equipped and is notable for its cleanliness and the efficiency with which all available space is used.



Unusual battery charging equipment installed in Los Angeles department store garage.

Membership Cards Valuable Assets to Associations

An effective example of cooperation among electrical contractors may be seen in the accompanying reproductions of membership cards of the Electrical Contractors and Dealers' Association of Sacramento and the Alta Electric Club in the San Joaquin Valley. These cards are placed in the offices of the power companies, city electricians, and others who may be called upon to suggest the name of someone who does electrical contracting. Instead of suggesting the name of a particular firm, which might cause embarrassment later, the people in these offices merely hand the inquiring party one of the cards containing the names of all of the members, with the statement that they

Electrical Contractors and Dealers Association *of* Sacramento

L. W. SHERMAN, Secretary
910 Ninth Street Telephone Main 918
If no answer, Call Main 1116

F. E. ANDERSON.....861 42nd Street
Telephone, Main 3068-J
CAL. MECH. & ELEC. ENG. CO..1110 J Street
Telephone, Main 575
THOMAS DAY CO.....1014 28th Street
Telephone, Main 5688
ELECTRIC SERVICE CO.....2941 35th Street
Telephone, Capital 41
ELECTRIC SUPPLY CO.....814 J Street
Telephone, Main 427
GEO. C. FOSS.....531 Oschner Bldg.
Telephone, Main 1180-W
J. C. HOBRECHT CO.....K at 11th Street
Telephone, Main 654
LATOURRETTE-FICAL CO.....907 Front Street
Telephone, Main 7880
E. M. MILLER.....1121 10th Street
Telephone, Main 4667
J. O. MURPHY.....1606 Del Paso Blvd.
Telephone, Main 6629
T. L. NIGHTINGALE.....2420 F Street
Telephone, Main 3530
CLIFFORD PRUDHOMME.....2620 Fifth Avenue
Telephone, Capital 1177
RELIABLE ELEVATOR WKS.....1111 Fifth Street
Telephone, Main 2523
SCOTT PLUMB. & ELEC. CO.....419 J Street
Telephone, Main 2144
STERLING ELECTRICAL CO.....907 8th Street
Telephone, Main 708
CARL. F. VINING.....2909 G Street
Telephone, Main 5067
W. H. VOGT & CO.....1108 J Street
Telephone, Main 3430
WAXON BROS.....1014 J Street
Telephone, Main 241

Membership card of the Electrical Contractors and Dealers' Association of Sacramento.

ALTA ELECTRIC CLUB

DINUBA
Curry Electric Co.
116 South L St. Phone 185

OROSI
Orosi Electric Works
El Monte Way Phone 46F24

REEDLEY
Home Electric Shop
1023 G St. Phone 1942

Reedley Electrical Works.
1621 11th St. Phone 9000

Reedley Plumbing & Electric Co.
1110 G St. Phone 1081

Membership card of the Alta Electric Club in the San Joaquin Valley.

are all reliable firms, leaving the selection to the individual. This has proved to be a satisfactory method of handling this problem, both from the standpoint of the contractors and the power companies and city officials, as it eliminates any possibility of favoritism and also brings the names of all of the contractors in the association before the prospective user of their services.

The Stone Electric Company, 710 W. Pico Street, Los Angeles, has recently opened a branch store at 2807 W. Pico Street under the name of Acme Electric Company. A. L. Stone is proprietor of the Stone Electric Company.

Only Minor Changes in the 1925 Electrical Code

Proposed Changes In Article 5 Not Adopted by Code Committee; Principal Changes to Consist of Editorial Revision

The proposed new practices in open and concealed wiring methods, which would require amending of Article 5 of the National Electrical Code, Wiring Methods, Sections 501, 502, and 611, were not adopted by the Sectional Electrical Code Committee of the American Engineering Standards Committee, sponsored by the National Fire Protection Association when it met at the Hotel Pennsylvania, New York, Feb. 17, 18 and 19, to make recommendations covering the 1925 edition of the National Electrical Code.

As A. Penn Denton, chairman of the committee on Article 5 was absent, the report of this committee was presented in three sections. The first section had to do with three-wire, single-phase systems inside of buildings, derived from auto-transformers as balancing coils. This report was referred back to the committee. The second section covered editorial changes. The third section covered the new wiring method which had been proposed; the article committee recommended that it be not adopted. This recommendation was approved.

The article committee proposed and adopted a resolution, "recording it to be the sense of the electrical committee that assemblies of twin and multiple conductors without metallic covering, when the wires with their protective covering are approved by the Underwriters' Laboratories, may be safely used when installed under specific limitations." The sectional electrical committee proposed and adopted "that the drafting of the rules covering the use of approved assemblies of twin and multiple conductors be referred to the committee on Article 5 to cooperate with the Underwriters' Laboratories and present at the next meeting of the electrical committee rules covering the proper use of such assemblies." The principle involved was apparently not denied, but the sectional committee intended to have rules formulated to limit its application, and consequently the question was referred back to the committee and the Underwriters' Laboratories.

There are no radical changes in the 1925 National Electrical Code. The committee's chief work seemed to be editorial revision which would further improve the good work done in producing the 1923 code. This will produce an edition which will be more nearly without conflicts and ambiguous statements, and will be much easier to read and understand.

The recommendations of the sectional electrical committee must be sent to each member of the committee for a mail ballot. After the approval of the members is secured, the recommendations will go before the National Fire Protection Association. They must be reprinted thirty days before this date. The recommendations can be endorsed in open meeting by the National Fire Protection Association. After endorsement the revision will be sent to the American Engineering Standards Committee, which will present it to its membership for mail-ballot endorsement. After receiving this endorsement, the code can be released in printed form, and will become standard.

The following are the more important code changes that were recommended: Details of requirements regardiing the identification of terminals of wiring devices to be inserted in Section 206, to become effective April 1, 1926. In Article 3, Outside Work—Pole Lines, the location of transmission lines with respect to buildings other than central-station plants was specified.

Several details were added to Article 4, Services, relative to the safeguards which must be provided when circuit breakers are used instead of fuses. The use of small circuit breakers instead of fuses on low-capacity circuits was recognized by the committee, provided, however, that it should be approved for the specific purpose before being used. Lead-covered cable must be used for underground service.

The use of a flexible cord of No. 18 gage copper with a 1/64-in. rubber insulation was approved, under Article 6, Conductors. All key sockets of the single-pole type will have to break the center contact instead of the screw shell, under the provisions of the new code, to become effective Sept. 1, 1926. The 1925 Code does not require polarity identification, but if it is used the method is specified as consisting of a contrasting braid on one of the two conductors, and the ground wire shall be the marked wire.

Inclosed Apparatus.

Article 8, Automatic Protection of Circuits and Appliances, provides protection in design or location of all live metal parts. This is another step toward fully inclosed apparatus as a means of protection from accidental contact. The 15-amp. maximum fusing of branch circuits will be continued as no demand has developed for a change. Bare wire will be permitted for a ground under Article 9, Grounding, when the grounding conductor is in a conduit and bonded to the ends of the conduit. The grounded conductor for the grounding of equipment may be of copper or other metal that will not corrode excessively under the conditions that exist. The minimum size of grounding pipe which will be permitted is also specified in another section.

Article 14, Fixtures, Lamp Sockets and Similar Fittings, describes the methods of polarity identification. Fixtures will have to be grounded under several more conditions than provided in the 1923 Code. The remote control of the switch of a range is permitted in Article 16, Heating Appliances. As the result of the study of the technical subcommittee, some changes were made in Article 37, Radio Equipment. Both A and B batteries must be fused with not more than a 15-amp. fuse at or near the batteries. This was the most important change in this section.

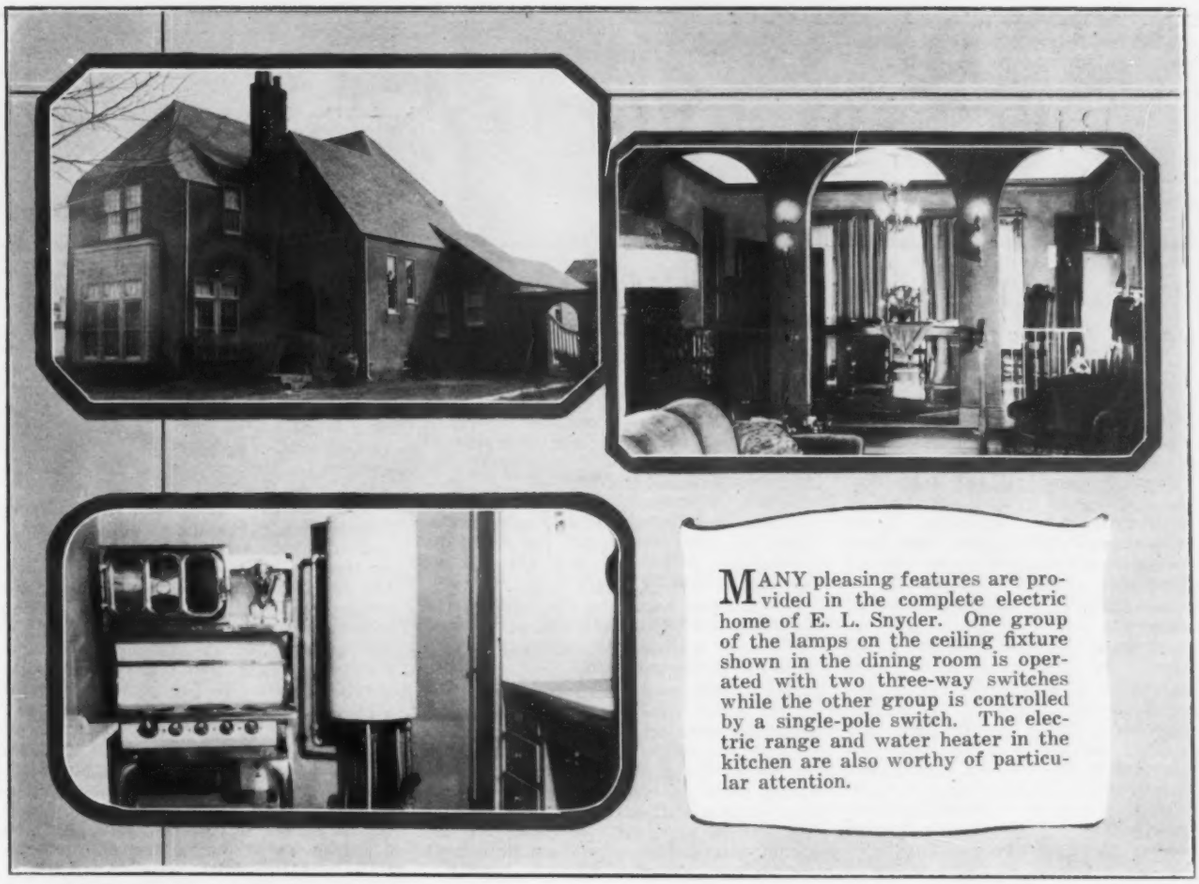
Article 39, Theaters, Including Motion-Picture Houses, was changed so that exit-lighting is to consist only of all the lights necessary properly to illuminate the lobbies and other portions to which the public has access. This change was necessary because of practical difficulties met with under the 1923 Code. The use of lightning arresters in Article 40, Small Isolated Plants, was held up pending further study by the committee. The use of static condensers as equipment was recognized in a new provision in Article 50, Systems and Voltages Over 600 Volts. This article now provides something specific and helpful regarding the safeguarding of high-tension lines entering properties other than those of central-station companies.

Lighting Service Bureau an Aid to Salt Lake Contractors

The lighting service bureau of the Rocky Mountain Electrical Cooperative League planned an average of 13 jobs per month during the last year; of these, an average of 8 jobs per month was closed. There were 41 outlets per job in the average, and the contractors received an average price of $273.25 for the wiring and equipment. Of the 92 jobs closed, 16 were outside of Salt Lake City, the remaining 76 were Salt Lake City stores, offices, automobile service stations, and churches. Lighting layouts were also furnished for 10 residences.

During June, which was the busiest month for the bureau, 16 installations, having a total of 1,796 outlets, were planned. Of these, 15 jobs were closed, with a total of 533 outlets which amounted to $4,258. Fourteen installations which contained 563 outlets were planned during March. Of these, 10 were closed, with 359 outlets, and approximately $3,274 was paid to the contractors for wiring and equipment. September was not such a busy month from the standpoint of the number of jobs planned, which totaled 11 with 2,082 outlets; however, 6 jobs, containing 1,006 outlets, were closed, from which the contractors received $4,825.

Left, serving tables, steam table and coffee urns of the Anglo-London-Paris Bank, San Francisco, Calif. Right, ranges and broiler. Note back shelf, which serves as warming closet for dishes; also note vents built over ranges and broiler, completely eliminating smoke and odors.



MANY pleasing features are provided in the complete electric home of E. L. Snyder. One group of the lamps on the ceiling fixture shown in the dining room is operated with two three-way switches while the other group is controlled by a single-pole switch. The electric range and water heater in the kitchen are also worthy of particular attention.

Architect Has Complete Electric Home Built for Himself

Having been sold on the advantages of complete electrification, E. L. Snyder, an architect of Sacramento, recently completely electrified his new home at 1111 Forty-third Street, in that city.

In the living room six duplex bracket outlets have been installed with a single switch control, in addition to four duplex convenience outlets and two air-heater outlets. The lighting fixture in the living room as shown in the accompanying picture, consists of two groups of lamps, one group being controlled by a single-pole switch and the other by two three-way switches. The living room also has two convenience outlets, one floor plug and one air-heater outlet. Both the lower and upper halls have center lights controlled by two three-way switches, and convenience outlets. The kitchen is equipped with a Standard electric range and a Wesix water heater with a 3-gallon auxiliary compartment and a 24-gallon boiler. A combination bath and dressing room is supplied with four light outlets, a switch, one convenience outlet, and an air-heater outlet.

The other rooms in the home all contain a goodly number of lighting outlets, controlled by switches, in addition to convenience outlets and air-heater outlets. A total of nine air-heater outlets have been installed, twenty-two duplex convenience outlets, twenty-nine lighting outlets, and four sets of three-way switches; in addition there are a number of single-pole switches, and a bell at the front door and a buzzer at the rear. The rear terrace has been lighted, producing a very pleasing effect.

The home was built by the Brier Construction Company, and the electrical wiring and fixtures were supplied by the Electric Service Company. D. H. McCulloch of that company was largely responsible for selling Mr. Snyder the idea of complete electrification of homes and apartments.

Mr. Snyder has been the architect on a number of electrically equipped homes and apartments which have been constructed in Sacramento recently. His personal experience with the success of this equipment has been an aid to him in having it installed by the owners.

Victor Lemoge, president of California Electragists, never loses an opportunity to display the symbol of the organization. Here it is shown on the front of the Phelan Building, Market Street, San Francisco

Lisle E. Bagwill of The Electric Shop, Morgan Hill, is now a member of the California Electragists.

Electrical Contractor Advertises Through Service Bureau

The Spencer Electric Company of Oakland recently has affiliated with the Homeseekers' Service Information Bureau, installed by Harry C. Knight of that city. This bureau has two objects: first, to sell quality building material for those who are affiliated; secondly, to place the buyer in touch with the buildings erected by a builder of standing who buys any or all materials used in its construction from such quality dealers. An extensive advertising campaign has been planned to run in the daily press, and otherwise to bring the prospective buyer into direct contact with the members of the bureau.

This is a concentrated effort to show the buying public quality buildings at the most reasonable prices obtainable. The services of the bureau are available to any reliable builder in the city. The service is free to the public and has proved an aid to seekers of homes, apartments and business buildings. The expense of providing the service is prorated among the participating members in proportion to the value of the material supplied by them in various installations. The advertising of the bureau has been copyrighted by H. S. Holmes, who is handling the bureau. He expects to develop similar bureaus in other localities.

The West Adams Electric Shop, operated by J. C. Crystal, formerly at 5210 W. Adams Street, Los Angeles, has moved into its new store at 5222 W. Adams Street.

BETTER MERCHANDISING

Motor Story Told with Aid of Traveling Display

General Electric Company Presents Information Concerning New Devices at Dealers' Group Meetings

Striving to give motor dealers a better idea of the general characteristics of new developments made in its line of motors and control equipment, the General Electric Company has been conducting a series of "motor meetings" in the southern part of California. These educational gatherings have been open to dealers, power company men and any other persons who were interested.

The meetings have been addressed by a group of men who were well acquainted with the new devices of the company. In delivering their talks dealing directly with the motors and control equipment these men have used stereopticon views to illustrate the points they wished to bring out. The merchandising of motors also was touched upon in the meetings, and for illustrating the idea of better window displays a model window was erected in front of the audience. This window was of the portable type and could be knocked down for transporting from place to place.

The purpose of the series of meetings was really twofold. In addition to the presentation of data and demonstration of new developments on the motors and control equipment, the company also desired to stimulate the merchandising of these devices. In this latter connection the meetings were arranged to demonstrate to the motor dealers that the merchandising of electric motors need not be in the least unattractive, but on the other hand can be done with a great deal of originality and distinctiveness.

In each city where the meetings have been conducted the General Electric Company man in charge of the territory has acted as the chairman of the meeting and has made all preliminary arrangements. The principal speakers have been secured from the district office and were men who have specialized in particular applications of the devices under discussion.

The recent meeting in San Diego is typical of those conducted in southern California and will give an idea of the manner in which the information was imparted to the audience.

Laying the foundation for effective sales of motors, the meeting was opened by a survey of electrical research as conducted by the laboratories of the General Electric Company. Introduced by E. M. Ellis, sales agent for the territory, S. E. Gates, Los Angeles district manager, brought out this phase of the subject in his discussion on "The Latest Developments of the Research Laboratories of the General Electric Company," with a brief explanation of the policies of the company. The gathering met in the sales display room of the San Diego Consolidated Gas & Electric Company in the basement of the Electric Building. A large crowd of contractors, motor and appliance dealers, electrical engineers, central station representatives and representatives of the street railway company heard the talks and saw the display with enthusiasm.

J. O. Case, assistant manager of the Los Angeles office, followed Mr. Gates' talk with a brief explanation of the policies of the company.

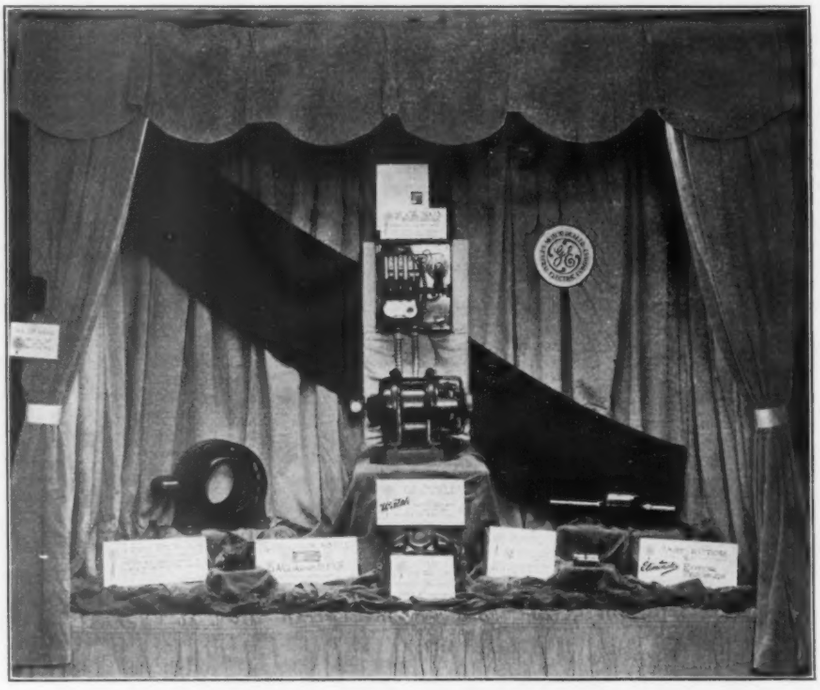
H. C. Hill, motor expert, then spoke of the recent developments made by his company in electric motors. He used two motors to show the points described in his talk and further illustrated his ideas by the showing of stereopticon slides. Mr. Hill explained the superior features of the new motors, giving detailed descriptions of certain important parts.

H. K. Winterer, control specialist, next took up an improved switch, claiming for it greater protection, safety and convenience to the motor operators. He also illustrated his talk by the use of stereopticon slides and presented a demonstration of a control box which had been mounted for the display.

A. L. Spring, representing the motor-merchandising field, spoke of the publicity and advertising campaigns being conducted by his company to familiarize the public with its products, with especial reference to motor sales. Then, to demonstrate that even a window display of electric motors can be attractive and unique, Mr. Spring drew aside the curtain covering a model window in which a display was arranged.

The window had been attractively dressed witih the merchandising cards and display matter put out by the company. In it were a motor and control box. An original touch was added by the placing of a push button on the outside of the merchant's window. Mr. Spring showed how interested window shoppers might touch the button and start the motor in the window, demonstrating the automatic-control feature. A motor, taken apart and each salient feature pointed to by means of ribbons, was also a feature of the display.

A. E. Holloway, commercial superintendent of the San Diego Consolidated Gas & Electric Company, concluded the program by urging dealers to give the fullest instructions possible to those who buy motors. The importance of fitting the right sized motor to each individual plant he also stressed from the central station standpoint, contending that too large a motor for a given plant caused trouble for the power company and was expensive for the customer.



The portable window display used to suggest means of trimming dealers' windows.

Window display of manufacturer's branch office.

Helping the Dealer to Sell Lighting Fixtures

Moe-Bridges Company Maintains Showrooms to Enable Local Dealers to Display Larger Stock of Merchandise

Developments in the selling of fixtures for home use have been such that at the present time customers are demanding a large stock of fixtures from which to make their selections. In a majority of cases the customer, while having some definite idea as to the type of fixture that is desired, will be better satisfied if, before making the final selection, a large variety of types is inspected.

To care for this demand is at times rather difficult for the smaller dealer who, because of lack of space and stock, is unable to show all the fixtures that the customer desires to see. The solution which is accepted by the dealer is that the jobber, from whom he secures his fixtures, will permit him to use the jobbing-house display room for showing fixtures to customers. If the dealer happens to be in one of the smaller cities where no jobber's stock is maintained, this avenue is closed to him and of necessity he must carry his own stock or rely upon catalogs to sell those fixtures which he may not have on hand.

The dealer located in the larger center is in a more favorable position as he may take his customer directly to the jobber's display room and there complete the sale. Jobbers are not the only agency maintaining such displays for the benefit of the electrical industry. Manufacturers of equipment have also established offices and showrooms that are accessible to the dealer. In a majority of cases these showrooms have been fitted up in keeping with the character of equipment on display, with the result that many of them are extremely well adapted to the selling of high-priced merchandise.

An example of the aid which is being given fixture dealers is that offered by the Moe-Bridges Company in San Francisco. This office is maintained as a direct factory branch serving the territory west of Denver. Wholesale trade only is solicited, and a ruling of B. J. Wildman, Pacific Coast manager, provides that sales shall be made only to dealers who, in the opinion of Mr. Wildman, are the only ones entitled to the trade discount.

In its San Francisco office the Moe-Bridges Company has established, in addition to the general sales offices, a group of show rooms in which a complete line of wall, ceiling and portable fixtures may be displayed. There are, in all, three rooms devoted to the displaying of fixtures and a fourth which contains a large stock of glassware.

All of the fixtures on display are placed in locations that will permit the best possible view of the merchandise and all are wired for service. Gangs of switches on the walls of the showrooms enable the salesman to light any fixture that he may desire to show the customer. In order that the fixture display may be up-to-date, the arrangement of the merchandise is being changed constantly, the newer pieces being given the better locations in the showrooms. By thus changing the positions of the fixtures frequently the display does not become a stereotyped exhibit but always presents a different appearance to the customer and gives an impression of the large size of the stock maintained.

These display rooms are open to the dealers at all times, thus giving them auxiliary space and stock which they may show to their customers. The customer may be taken directly from the dealer's place of business to that of the manufacturer and there may be shown whatever fixture he fails to have in stock. The interior of the office maintained by the company is plainly but attractively finished. Walls have been painted in a light cream tone and fittings harmonize perfectly. Attractive window displays are prepared for the show windows and the portable lamps which are shown are changed at regular intervals. Ceiling fixtures of various types are often used in the displays to add to the pulling power of the windows.

A large stock of lamps and glassware is warehoused by the company, much of this stock being kept on the premises. Storerooms are maintained in the basement and on the mezzanine floor, and the shipping and receiving room is in the basement. A spraying room for doing special work is located on the mezzanine floor.

The Broadway Mercantile Company, specialists in the merchandising of washing machines and vacuum cleaners, has moved from its former location at 847 N. Broadway to 2205 S. Grand Avenue, Los Angeles, where it has greater display space.

Interior of fixture showrooms which are always open for use by the electrical industry.

NEWS OF THE INDUSTRY

California Electrical Bureau Advisory Board Meets

Plans and the budget for June Bride Week, to be held June 1-6, were discussed by the Advisory Board of the California Electrical Bureau at its meeting held at the Jonathan Club in Los Angeles, March 27. It was decided that a new set of posters would be prepared to stimulate interest in the sales campaign. The purpose this year will be to focus attention on the first week in June, and in addition to this to conduct a sales campaign from May 15 through June. Prizes will be awarded for the best decorated windows appearing during June Bride Week. In connection with this discussion it was brought out that the idea of an electrical June Bride Week was developed in California through the California Electrical Cooperative Campaign, the predecessor of the Bureau.

The electric home committee presented a recommendation which proposed a new policy to be followed in the manner of selecting electric heating apparatus for homes to be displayed under the Bureau's direction. The plan as presented and adopted provides for a new method of selecting electric air heaters when these are to be of the insert type and are to be permanent parts of the home. Under the new plan when insert heaters are to be used, only one manufacturer's heaters of this type will be used in any one home.

The type of heaters to be used will be chosen by lot before the home is built. As each manufacturer is awarded the installation in a home, his product will be removed from the list of those which have not been used and the heaters for the next home will be chosen from those manufacturers who have not yet had the opportunity of installing their equipment. As soon as every manufacturer who desires to display his product shall have been given the opportunity to do so, all of the names will be grouped again and selection will be made from the entire list. The old policy of selecting individual heaters by lot will be maintained where portable heaters are to be used.

The report of the electric home committee was presented, showing that one home had been exhibited since Jan. 1 and that definite plans for the display of seven more had been made. The schedule of the committee calls for a total of twenty electric homes in California during 1925. Following the committee's report, it was given the task of forming a definite policy in regard to whether or not the Bureau would sponsor electric homes erected by individual contractors in small communities. A report is to be made at the next meeting of the Advisory Bureau, to be held in San Francisco April 24-25.

C. L. Chamblin reported to the board on the action taken by the Society for Electrical Development in relation to the institution of the Read Seal wiring plan in California. Definite action on the plan will be taken in the near future.

Among those present at the meeting, which was presided over by R. E. Fisher, chairman, were:

F. J. Airey, W. S. Berry, P. H. Booth, W. F. Brainerd, C. L. Chamblin, H. H. Courtright, C. J. Geisbush, F. E. Elser, W. L. Frost, H. H. Harper, V. W. Hartley, C. T. Hutchinson, Victor Lemoge, Charles Listenwalter, Walter Price, K. E. Van Kuran, F. H. Woodward and D. E. Harris.

Denver Franchise Bid Proposes Reduction in Rates

A reduction in rates to Denver customers is proposed by the Public Service Company of Colorado according to a tentative draft of the new twenty-year franchise which was presented to city officials last week.

Details of the rate revision have not been perfected, according to reports, but assurance has been given by company officials that a reduction of 5 per cent in electric rates and 10 per cent in gas rates will become effective. The saving to customers is estimated at $350,000 annually.

It is proposed that rate changes in the future be governed by the cost-accounting standard of the federal department of labor whereby a barometer of rates is created by striking an average between all necessities of life and the salaries of paid wage earners. The reduction therefore proposed would be merely a base price and could be raised or lowered yearly thereafter by the company under the terms of the proposed franchise.

While the government figure established 149.7 as the base price last year, the Public Service company will consider 150 as the index figure on which future changes may be based. Under this arrangement the rates would be figured as of Jan. 1 each year, the change to be made effective the following April.

Representative business men have been called in by Mayor Stapleton of Denver to confer on the franchise matter, and several have expressed a desire to secure an expert on franchise matters to serve as special counsel for the city. It is understood that Henry E. May, city attorney, is opposed to the tentative franchise.

Neither the city nor the company has taken definite action on the presentation of the franchise, but it is believed generally that it will be submitted at the general city election May 19.

West Coast Power Company Starts Operations in Northwest

Headed by A. Welch, well known among utility operators of the Northwest, the West Coast Power Company, a Delaware corporation, was organized in December, 1924, and maintains its general office at 1101 Gasco Building, Portland. Besides Mr. Welch, president and general manager, the staff of officers includes Robert T. Chambers, Chicago, vice-president; C. F. Cunningham, Newport, Ore., secretary; and R. H. Walton, Chicago, treasurer.

The company has acquired the entire assets of the General Light & Power Company, serving Newport and Toledo, Ore., and near-by beach resorts, and also Shelton, Wash.; the Waldport Lighting Company, serving Waldport and Bayview, Ore.; the Florence Electric Company, serving Florence, Glenada, Cushman and Acme, Ore.; and the Shorey Light & Power Company, serving Reedsport and Gardner, Ore.

The Newport district is served by power purchased from the Pacific Spruce Corporation mill at that city; at Waldport, service is supplied by a 200-kw. hydroelectric plant with a 100-kw. diesel engine standby. The Florence property has two diesel engines with a total capacity of 200 kw.; while at Reedsport, 250 kw. in diesel engines supplies the demand. Plans are formulated for the immediate connection of the Florence and Reedsport properties by a 22,000-volt transmission line approximately 31 miles long, and the installation of a 750-kw. steam plant at Reedsport is also planned for this year. Later the company contemplates tying in the Newport and Waldport properties and eventually connecting its entire Oregon system by a line from Waldport to Florence.

The Shelton, Wash., property is served by a 300-hp. steam plant supplemented over the peaks by a 150-kw. hydroelectric plant. Arrangements have been made by the West Coast Power Company to purchase surplus power from the Reed-Simpson lumber interests and the McCleary Lumber Company, both with large mills under construction at Shelton, to be electrically driven from a central steam power plant.

Four-State Columbia River Compact Authorized by Congress.—A bill, previously passed by the senate, designed "to permit a compact or agreement between the States of Washington, Idaho, Oregon and Montana respecting the disposition and apportionment of the waters of the Columbia River and its tributaries and for other purposes," was adopted by the House of Representatives on March 3. The treaty is to be entered into before Jan. 1, 1927, and is to cover irrigation, power, domestic and navigation uses of the river's waters.

First Unit of Seal Beach Plant Is Nearing Completion

With construction work ahead of schedule, the first unit of the new electric station being erected at Seal Beach by Dwight P. Robinson, Inc., for the Los Angeles Gas & Electric Corporation steadily is nearing completion. The ultimate capacity of the entire plant is planned to be 288,000 hp., comprising six units. The work now in progress consists of buildings sufficient to house two turbo-generator units. One of these with a capacity of 36,000 kva. is expected to be in operation not later than July 1, 1925. This unit is now about three-fourths completed.

One of the unusual features of the plant will be the three large reinforced concrete stacks, each 375 ft. in height. The stack, which will serve the boilers of the first two units, is now more than two-thirds finished. The steam boilers are of Babcock & Wilcox construction and are adapted to burning either natural gas or oil. The three boilers of the first unit of the station are each capable of generating 175,000 lb. of steam per hour continuously at 385 lb. gage pressure. These are reputed to be the largest units on the Pacific Coast. Each boiler will be equipped with a forced-draft fan which will draw air from out-of-doors through a pre-heater. The pre-heaters will use heat from the stack gases that is ordinarily wasted and will raise the incoming air to 300 deg. F. Steam from the boilers will pass through superheaters and be raised to a temperature of 700 deg. F. to permit the greatest steam efficiency in the turbines.

The generator is of a new type of construction recently developed by Westinghouse engineers. The type has been used successfully for a number of months in the East, but the one being installed in the Seal Beach Station of the Los Angeles Gas & Electric Corporation is the first of its kind west of Chicago.

The generator turbine has a maximum capacity of 48,000 hp. and an operating speed of 1,800 r.p.m. It requires 140 tons of steam per hour to operate it at full load. The generator voltage is 13,200 volts. Transformers will raise this to 110,000 volts for transmission over a steel tower line approximately 24 miles to Los Angeles. A new substation is to be built as close as possible to the system load center to distribute the power from the new plant.

Emergency Act Provides for Tax on Utility Earnings

As a piece of emergency legislation designed to help supply a deficiency of funds from taxes available to meet the state budget in the coming biennial period, the Oregon State Legislature has passed an act providing that each public utility and railroad operating in the state pay a tax based on the amount of annual gross revenue of such utility or railroad. The act is temporary in character and automatically expires at the end of the current biennial period. The money so raised is to go into the general fund of the state.

The tax, which is payable annually at the time of filing with the Public Service Commission of Oregon the annual financial statement, or report required by law, is in the form of a certain fee, not a percentage, graduated upwards as the gross earnings of the individual company fall within certain definite limits. For instance, there are twelve different fees ranging from $10 in the case of the company having annual earnings of less than $5,000, to a fee of $3,000 in the case of the company having earnings in excess of $6,000,000. The act will raise about $40,000 annually or $80,000 in the biennial period.

New Corporation Formed to Distribute Ohio Vacuum Cleaners.—The Easy Electric Housekeeping Corporation is the name of a new concern in San Francisco recently incorporated by W. A. Hawley, formerly Pacific Coast representative of the Hoover Suction Sweeper Company, and J. Lee Richards, formerly Western sales manager for the Syracuse Washing Machine Corporation. Mr. Hawley is president and general manager, and Mr. Richards vice-president and treasurer of the new company, which will act as Pacific Coast distributors for the United Electric Company, Canton, Ohio, manufacturers of the Ohio vacuum cleaner. The firm is incorporated for $100,000 and is a close corporation. Sales headquarters have been established at 1003 Market Street.

Recent view of Seal Beach plant of the Los Angeles Gas & Electric Corporation

Legislatures Discuss Approval of Colorado River Pact

Approval of the Colorado River Compact was given by the legislature of Arizona when a concurrent resolution, containing certain reservations concerning the allocation of water between the lower basin states of Arizona, California and Nevada, was passed on March 11. According to the resolution passed by the Arizona legislature, it must be accepted and approved by the legislatures of California and Nevada by March 15, 1927. On March 24 Gov. G. W. P. Hunt vetoed the resolution.

The reservations included in the Arizona approval of the Colorado River Compact in relation to the apportionment of the water of the Colorado provide that: (1) to Nevada shall be alloted out of the apportionment to the lower basin all of the water which reasonably can be applied within the state to domestic and agricultural uses; (2) the remainder of the water apportioned to the lower basin is to be divided equally between the states of Arizona and California, for application to domestic and agricultural uses in each state; (3) the right of the lower basin to increase its beneficial use of water from the Colorado by 1,000,000 acre-ft. per year shall accrue to Arizona solely, provided that this right shall exhaust Arizona's claim to the waters of the Colorado River system entering the Colorado within Arizona below Lee's Ferry; (4) water to be delivered to Mexico shall be apportioned first from the surplus flow of the Colorado over and above that apportioned to the upper and lower basins, and if a greater quantity is required the burden of supplying the water as regards the lower basin states shall be in proportion to the apportionment of the water assigned to the three states as in (1) and (2) above.

A legislative commission to negotiate with similar commissions from California and Nevada was authorized in the resolution.

While the discussion on the ratification of the original seven-state compact has been considered by Arizona, the other six states interested in the development of the Colorado River have been considering the ratification of the compact as a six-state agreement (Journal of Electricity, March 15, 1925, p. 222). The resolution to make the Colorado River Compact binding upon the signatory states when six states shall have ratified it, as proposed by Colorado, has been accepted by Colorado, Wyoming and Utah. A similar resolution with the reservation that to make its ratification valid the federal government provide storage in the upper basin of the Colorado has been passed by the California assembly and will be considered by the senate in the near future.

Great Northern Railway to Start Electrification of Western Division.—Initial steps toward the electrification of the Great Northern Railway's line across the Cascade Mountains in Washington have been taken by the company in moving the terminal for the transfer of through freight from Skykomish to Everett. The first section to be electrified will be that between Skykomish and Tye, on the western slope of the mountains. The greater part of the preliminary and location work has been completed.

Guy W. Talbot to Head Northwestern Electric Co.

New Board of Trustees Elects Officers and Transfers Executive Headquarters from San Francisco to Portland

Following the purchase of the Northwestern Electric Company, Portland, by American Power & Light Company interests, (Journal of Electricity, March 1, 1925, p. 184) the annual meeting of the stockholders of the Northwestern Electric Company held at Vancouver, Wash., March 18, 1925, resulted in the election of the following to the board of trustees: Guy W. Talbot, John A. Laing and Emery Olmstead, Portland; M. M. Connor, Vancouver, and Herbert Fleishhacker, San Francisco. Of the old board, the members that retire are Mortimer Fleishhacker, A. N. Baldwin and R. E. Wallace, San Francisco.

On the same day the new board met and elected the following officers: Guy W. Talbot, president; John A. Laing, vice-president; L. T. Merwin, vice-president; George L. Myers, assistant to the president; C. W. Platt, secretary and treasurer, and A. N. Cudworth, assistant secretary and assistant treasurer. Messrs. Talbot, Laing, Myers and Platt hold the same positions in the Pacific Power & Light Company and the Portland Gas & Coke Company, other American Power & Light Company properties in the Northwest, while Messrs. Merwin and Cudworth retain the same positions that they have held with the Northwestern Electric Company.

The preferred stock selling activities of the Northwestern company will be carried on by the investment department that handles the preferred stock sales of the Pacific company and Portland Gas company, under the direction of the present manager of that department, S. E. Skelley. Under these changes in organization, which are all that thus far are contemplated, each company retains its individual identity, the principal effect of the purchase being the moving of the executive headquarters of the Northwestern Electric Company from San Francisco to Portland.

Mr. Talbot has announced two important matters of policy bearing on the future construction program of the allied companies. These long have had a physical inter-connection across the Columbia River between the Powerdale plant of the Pacific company on the Hood River in Oregon and the Condit plant of the Northwestern company on the White Salmon River in Washington. The first of these is that the needs and the power production facilities of both companies will be studied jointly before proceeding with any development of additional generating capacity. It is generally understood that, when this development is undertaken, it will be probably either on the Lewis River in Washington at a site controlled by the Northwestern company, or on the Deschutes River in Oregon at a site controlled by the Pacific company.

The other announcement is that plans are being formulated for the construction of a transmission line connecting the tied-in power systems of the two companies adjacent to the Columbia River with the Yakima-Walla Walla power system of the Pacific company in eastern Washington. When this line is built, there will be an unbroken transmission line from western Montana to Portland over the lines of the Montana Power Company, The Washington Water Power Company, the Pacific Power & Light Company and the Northwestern Electric Company. Several routes are under consideration, and no decision has been reached.

Removal of Commission Control of Utility Rates Sought

The Los Angeles city council is seeking the cooperation of other cities and towns of California in a movement to take the control of rates of public utilities out of the hands of the California Railroad Commission. To that end the following resolution, introduced by Fred C. Wheeler, councilman, was adopted at a meeting of the council held Feb. 10, 1925:

WHEREAS, Great dissatisfaction exists in Los Angeles and the state at large, over many decisions of the State Railroad Commission, wherein great public utilities corporations, such as electric companies, gas, water and telephone companies, have been granted rates which the public believe to be out of proportion to the service rendered, as instanced by their late decision in which they granted the Southern California Telephone Company heavily increased rates for an inferior and unsatisfactory service, and

WHEREAS, These decisions are coming with frightful regularity, and if continued, the people will be heavily handicapped by these intolerable increases. Therefore be it

RESOLVED, That this city invite other cities and towns to join us in presenting to the Legislature such measures as will allow the people of the state, including cities and towns, to set the rates to be charged for gas, water, electricity and telephones, to the end that fair and equitable rates be maintained.

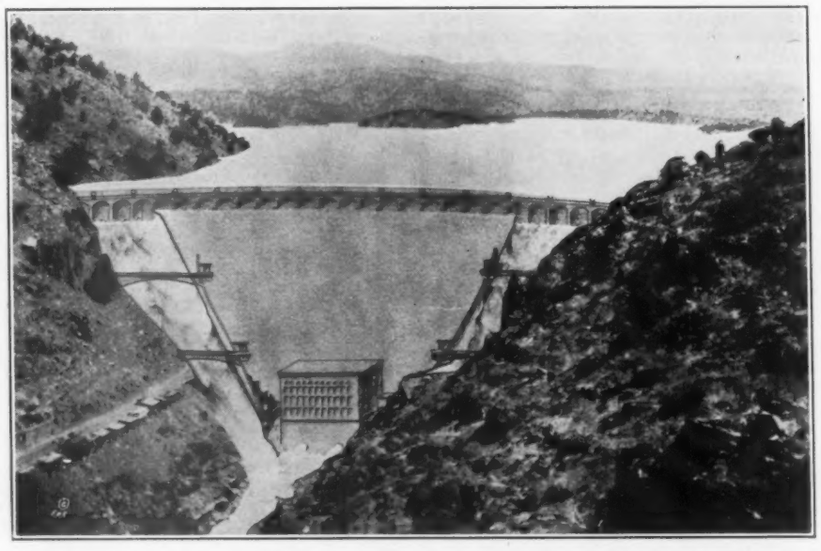
Copies of this resolution have been mailed to various towns and municipalities.

Associated Manufacturers of Electrical Supplies to Meet in June.—The annual meeting of the Associated Manufacturers of Electrical Supplies will be held at Hot Springs, Va., during the week beginning June 8.

Power-Irrigation Development Planned in California

At a joint meeting of the boards of directors of the Oakdale and the South San Joaquin Irrigation Districts held in Manteca, Calif., March 18, it was decided to take immediate steps to ask the State Bond Commission to ratify an agreement made last January by the two districts with the Pacific Gas and Electric Company, San Francisco, as lessor of the Sierra & San Francisco Power Company. Under the terms of this 40-year contract, the irrigation districts will build a reservoir at Melones on the Stanislaus River in Calaveras County to impound about 100,000 acre-ft. of water. The power company will build a power plant of 30,000-kva. capacity to cost approximately $1,500,000 and will pay the irrigation districts approximately $125,000 a year for forty years for the water used from the proposed reservoir. Any surplus over storage requirements will go to the power company. It is believed that the yearly payments will be sufficient to pay the interest on the $2,200,000 bond issue, which will be necessary for the construction of the dam and to pay off the bonds at the end of forty years. Plans call for the issuance of $1,100,000 in bonds by each district, and petitions will be circulated at once to secure the signatures necessary for submission of the matter to the people at an election. Construction of the dam and power plant is expected to begin upon ratification of the bond issue.

B. C. Company May Extend Transmission System to Serve Vancouver Island Cities.—The cities of Duncan and Ladysmith, and the Nanaimo Heat & Power Company, Nanaimo, B. C., all on Vancouver Island, have entered into negotiations with the British Columbia Electric Railway Company, Ltd., for the purchase of electric energy. The latter company now is investigating the possibilities in the several cities, with a view to installing a 66,000-volt transmission system. The cost of the system, it is said, would be in the neighborhood of half a million dollars.



Artist's drawing of Exchequer Dam and power house of the Merced Irrigation District, on the Merced River, in the center of the San Joaquin Valley, California. The dam is to be 310 ft. high, and the installed capacity of the plant will be 30,000 kw. It is expected that the project will be completed by May, 1926.

Five Western Utilities Share in $22,948,000 Budget

A total of $22,948,000 will be expended for construction during 1925 on the public utility properties controlled by the Standard Gas & Electric Company, according to a recent announcement of H. W. Fuller, vice-president in charge of engineering and construction, Byllesby Engineering & Management Corporation.

Western companies for which construction plans have been made and the improvements contemplated for each follow:

San Diego Consolidated Gas & Electric Company—Construction of an intake tunnel and screen house for condenser and boiler feed system, preliminary to installation of a 20,000-hp. turbo-generator; extensions to underground distributing system; installation of additional switching facilities in power stations and substations.

Western States Gas & Electric Company, Stockton, Calif.—Installation of additional transformers and switching facilities in Station A; improvements to substations in Stockton, Lodi, Altaville and Elk Grove, and to gas plant and garage in Stockton; installation of additional switching and transformer facilities at Richmond substation, and of spare transformers at Eureka and Trinity River plants.

Mountain States Power Company, Albany, Ore.—Building of new 66,000-volt transmission lines between Albany and Springfield via Corvallis, and between Independence and Salem, with necessary switching facilities at terminals and intermediate points.

Southern Colorado Power Company, Pueblo—Building of a 60,000-volt 60-cycle transmission line between Pueblo and Canon City to facilitate exchange of power between plants at those points, with necessary changes in substation facilities; extensive improvements to transmission lines in the La Junta-Rocky Ford district.

Coast Valleys Gas & Electric Company, Salinas, Calif.—Construction of a new substation in that city, designed to take care of local distribution as well as incoming 66,000-volt transmission lines; improvements to gas plants at Salinas and Monterey. (Journal of Electricity, March 15, p. 224.)

Nation-wide Industrial Lighting Campaign Plan of N.E.L.A.

A nation-wide industrial lighting campaign will be carried on in the fall, according to plans made at a meeting March 17 at the National Electric Light Association's headquarters in New York called by J. F. Becker of the United Electric Light & Power Company of that city and chairman of the industrial lighting committee of the Commercial National Section. Forty-seven representatives of central stations, manufacturers and national organizations were present.

An executive committee consisting of J. F. Becker, chairman; G. M. Moore, treasurer; L. H. Rosenberg, secretary; and five others will direct the Industrial Lighting Activity, and a committee of from twenty-five to thirty representatives of all branches of the electrical industry interested in industrial lighting and of other industries interested in better and safe production in manufacturing plants will be appointed by Mr. Becker to carry out the program outlined. A committee chairman will be appointed for each of the twelve geographical divisions of the National Electric Light Association.

A plan book detailing the complete campaign will be distributed. According to the plan endorsed, an advertising campaign will be conducted in national, business and industrial magazines in order to interest plant executives in better industrial lighting and to assist local groups in the industrial cities in their efforts to stimulate the use of better plant lighting. Local groups will consist of existing electrical leagues, or committees may be formed by local members of the electrical industry to carry on the work.

In addition to the national advertising, direct-mail material consisting of several broadsides to be mailed to prospects will be furnished the local groups; lecture and demonstration service will be provided and men sent into the field to assist in the solving of local problems. The national committee will supply also suggestions for local newspaper advertising; for demonstrations of the proper equipment for factory lighting; for laying out model industrial plants; and for planning actual specifications for the relighting of such plants.

Expenses of the national advertising and organizational work will be borne by manufacturers of reflectors, lamps and similar equipment. The costs of the local campaign will be taken care of by the local groups.

Santa Paula Man Is Awarded Resuscitation Medal

J. M. Buswell, designated by Samuel Insull as his personal representative, was the guest of honor at the annual meeting of the Chamber of Commerce, Santa Paula, Calif., Jan. 16, when he awarded to C. G. Gaertner the Insull gold medal for resuscitation.

On Nov. 15, 1923, K. E. Kincaid was doing some work in the Santa Paula substation of the Southern California Edison Company when he lost his footing and came in contact with a 15,000-volt bus-bar. Mr. Kincaid immediately became unconscious and appeared to be dead. Mr. Gaertner immediately set about using the Schaefer prone-pressure method of resuscitation and, after ten minutes of doubt, signs of life appeared. Soon after Mr. Kincaid was breathing naturally and was transported to the hospital where he was treated for burns.

The case was cited to the National Electric Light Association, which is authorized by Mr. Insull to make these awards.

National Electric Light Association
This is to Certify that
Charles Gillis Gaertner
employed by
Southern California Edison Company, Los Angeles California
has been awarded the Insull Medal for the saving
of human life from death by electric shock by the
Prone Pressure Method of Resuscitation
In Witness whereof
Successful resuscitation of K.E. Kincaid, at
Santa Paula Substation,
November 15, 1923.

Certificate of Insull medal award, Insull gold medal and C. G. Gaertner receiving medal from J. M. Buswell

Prizes for Sales Helps Suggestions Announced.—The United Electric Company, Canton, Ohio, has announced a prize contest in which $1,000 in cash prizes will be awarded to dealers for suggestions on dealer or sales helps that the dealer believes will be most helpful in stimulating sales. The aim of the contest is to secure sales helps which the dealer can and will use in increasing his sales.

Permits Covering Western Sites Granted by Commission

A preliminary permit for one and a half years has been granted by the Federal Power Commission to the El Dorado Power Company, San Francisco, covering a proposed hydroelectric power project at China Flats site on the Silver Fork of the South Fork of American River, in El Dorado County, Calif. The project, which is located entirely on public lands within the El Dorado National Forest, will be developed in three steps. At first only the natural flow of Silver Fork as modified by existing storage of Twin and Silver Lakes will be utilized. As the demand for power increases, the storage capacity of Silver Lake reservoir will be increased from 5,000 to 25,000 acre-ft.; finally a dam forming 7,500 acre-ft. of storage on Silver Fork will be constructed, according to plans outlined. The capacity of the site is estimated at 7,000 hp.

The Southern Colorado Power Company, Pueblo, has been granted a three-year preliminary permit. This covers a proposed hydroelectric power project on Grape Creek, a tributary of Arkansas River in Fremont and Custer Counties near Canyon City, West Cliff and Silver Cliff, Colo. The development, as planned, provides for two reservoirs. The first, which will be formed by the construction of a dam about 6 miles below West Cliff, will have a capacity of 97,000 acre-ft. and be connected by a conduit about 12,000 ft. long to a power house downstream designed to generate about 7,500 hp. at a 900-ft. head. The second reservoir will be formed by a dam 6 miles above the mouth of Grape Creek. It will store about 15,000 acre-ft. of water and will be connected by an 8,000-ft. conduit to a power house of about 6,000-hp. capacity at a 700-ft. head.

California Electrical Bureau Presents Annual Report

The annual report of the California Electrical Bureau, formerly the California Electrical Cooperative Campaign, has been published and distributed to the membership of the association. The report, which is the seventh of its kind, also contains an historical record of the organization. Included in the 1924 report are data on the activities of the association during the past year. This report covers: the Adequate Wiring Program; the Better Illumination Program; and the Sales-Stimulation Program.

Under the wiring program plans for a large number of homes were supervised, and a considerable quantity of the model wiring plans were distributed to interested parties. Cards bearing the inscription, "This Home Is Equipped with Electrical Convenience Outlets" were placed on homes in the course of construction that had one or more convenience outlets.

Six electric homes were displayed under the auspices of the Bureau, and it assisted in the exhibiting of several others.

To stimulate better lighting an industrial lighting exhibit was maintained in the Los Angeles Chamber of Commerce and was demonstrated to 266 industrial plant superintendents. The portable window lighting exhibit was shown in several different cities throughout California. A number of plans for lighting were laid out and surveyed by the Bureau, witih the result that better lighting was installed in the buildings. The Bureau also served as the distributing organization of the Better Home Lighting Contest material.

June Bride Week was sponsored by the Bureau as the principal activity under the sales-stimulating program. Material assisting dealers to call the attention of the public to the appropriateness of electrical gifts for the June bride was prepared and distributed free. Eleven cash prizes aggregating $100 were distributed among the dealers having the best window displays for the week. Newspaper advertising calling attention to June Bride Week appeared in 150 papers throughout the state. During the Christmas season of 1924 the Bureau staff assisted dealers in displaying merchandise through the use of manufacturers' sales helps. No material was prepared by the cooperative organization for the Christmas trade.

Plans for 1925 include the erection and display of twenty electric homes within the state. At the present time one of these has been exhibited already, and six more are definitely scheduled. Those for which arrangements have been made are as follows: Santa Barbara, April 15-25; El Centro, May 1-10; San Francisco and Los Angeles, May 10-17 (in conjunction with Better Homes Week); San Diego, May (date not definite); Santa Cruz, July 17-26. A home at Sierra Madre, open from Jan. 29 to Feb. 4, was visited by 3,500 people.

Thirteen more homes will be opened during the coming year. They will be located at points where the best connections can be made. Negotiations now are being conducted in the following cities: Santa Ana, Monrovia, Long Beach, Redlands, Alhambra, San Bernardino, Pomona, Bakersfield, Fresno, Stockton, Modesto, San Luis Obispo, Petaluma, Chico, Marysville, Eureka, and in San Mateo and Marin Counties.

The budget for the coming year shows that $50,000 will be necessary to carry on the work planned. Manufacturers, jobbers and contractors will be solicited for $20,000 of this, the balance to be subscribed by the central station companies and retailers.

Electrical Jobbing House Opens New Establishment in Oakland

The Union Electric Company has recently been incorporated in Oakland and has established an electrical supply jobbing house at 121-123 Tenth Street. The company has a complete stock of wiring materials and supplies and will serve the electrical contractor-dealers of central California. Some of the better known material to be stocked will include Wiremold, Buckeye conduit, T. V. externally operated switches, Pass & Seymour schedule material, and Wheeler R. L. M. reflectors. F. G. Booskirk is president of the concern. He was formerly western manager for Albert Wahle Company, and has been in the electrical industry since 1912. Frank H. Mills, secretary-treasurer, was formerly with Allied Industries, Inc., San Francisco; for twelve years prior to that he was with the Electric Appliance Company, San Francisco. E. A. Peterson is vice-president of the concern. Robert King is the outside salesman for the company. He has been an electrical contractor in Oakland for a number of years and is well known among the members of the industry. He formerly operated the King Electric Company.

Publicly Owned Utilities May Be Taxed in California

Taxation of publicly owned utilities in California is proposed in a bill now pending before the legislature of that state. The measure provides that these utilities pay a tax based on gross revenue equivalent to that paid by privately owned utilities under the King tax bill. The bill has been reported out of committee, but no action had been taken up to March 25.

As the bill would be a constitutional amendment, if passed by the legislature it will be subjected to referendum vote of the people of California at the general election in 1926. The bill is being sponsored by the farm organizations of the state and is being opposed by the cities having municipal systems. The farmers claim that the cities in which municipal systems are operating are evading state taxes on these utilities, thus increasing the indirect taxes falling upon farming and industry. A similar bill appearing as an initiative measure on the general ballot in November, 1922, was rejected by the voters of the state.

To Observe Better Homes Week During Month of May

To stimulate interest in home-building throughout the country the week of May 10-17 has been designated as "Better Homes Week." Exhibits of modern homes have been planned for the leading cities of the United States. These homes will be displayed under the auspices of the women's clubs in the various cities, and it is the purpose of the leaders of the movement to have the houses modern in every respect.

Homes will be exhibited in both San Francisco and Los Angeles. The San Francisco home is being erected in Balboa Terrace and will be exhibited under the auspices of the San Francisco City and County Federation of Women's Clubs. The San Mateo County women's clubs will cooperate with the San Francisco association in displaying the home. The home will be completely electrical. The cooperation of the California Electrical Bureau has been requested by the women's organizations, and during the time that the home is open for inspection a representative of the bureau will be present to demonstrate the electrical equipment installed. Similar arrangements are being made for the home in Los Angeles.

The San Francisco home was planned by the California Electrical Bureau, and upon the suggestion of the representatives of the Better Homes Committee was turned over to the federation for the purpose of display. It is probable that the home planned for Los Angeles will be treated in a similar manner.

Value of Western Plants Agreed Upon.—An agreement has been reached between the Federal Power Commission and the Western States Gas & Electric Company, Stockton, Calif., whereby $1,898,365 is to be regarded as the fair value of its Placerville plant on the South Fork of American River in El Dorado County, Calif. Similar agreements have been entered into with the San Joaquin Light & Power Corporation. The fair value of its Kerckhoff plant on the San Joaquin River is fixed at $6,166,206, while $2,097,230 is agreed upon as the fixed capital account of the project as of Dec. 31, 1922.

News of the Electragists

State-wide California Electragists Society Formed

Southern California Association of Electrical Contractors and Dealers Unites with California Electragists

A state-wide organization of California Electragists is a reality following a meeting of an executive committee representing the Southern California Association of Electrical Contractors and Dealers and a similar committee from the former body of California Electragists from the northern part of the state. The meeting was held in Los Angeles March 26. Those present representing the Southern California Association of Electrical Contractors and Dealers were F. E. Elser, Los Angeles; Frank McGinley, Harbor Electric Company, Wilmington; J. F. Zweiner, San Diego; C. W. Jones, Pomona Fixture & Wiring Company, Pomona; J. J. Farley, Farley Electric Company, Fullerton; and C. J. Geisbush, executive secretary. The California Electragists from northern California were represented by Victor Lemoge, president; Walter F. Price, executive secretary; C. L. Chamblin, California Electrical Construction Company, all of San Francisco; and H. H. Courtright, Valley Electrical Supply Company, Fresno. W. F. Brainerd, California Electrical Bureau, Los Angeles, also attended the meeting.

Frank McGinley was appointed temporary chairman of this joint meeting and Walter F. Price secretary. A letter of formal application from the Southern California Association of Electrical Contractors and Dealers was presented requesting affiliation for the entire membership of 133 with the California Electragists. This application was unanimously accepted. In the absence of H. H. Walker, president of the southern association, who is ill and will not be able to take an active part in association work for several weeks, F. E. Elser informed the meeting he had been elected spokesman of the southern organization. Mr. Elser suggested that, although the northern California members had agreed to give the first year's presidency to the south, the present officers continue to serve; and that the president be elected from the southern division at the next meeting of the executive committee. This suggestion was concurred in by the other members, and the chair was turned over to President Lemoge.

The plan of affiliation that was adopted provides for one California association to be known as the California Electragists, with two divisions, one in Los Angeles for the southern division and one in San Francisco for the northern division. The executive committee will be composed of an equal number selected from each of the executive boards of each division. This committee will meet quarterly or semi-annually and will elect the state chairman for the coming year at its first meeting each year. The general management of the organization will be vested in this committee, and it will determine the distribution of the association funds based on budgets of each division.

Each division may secure additional funds as it sees fit, and will have complete jurisdiction over the expenditures in its division. The executive board of each division will direct its own field activities and arrange its own quarterly and annual meetings in line with the general policy of the executive committee. Members from either division will be welcome at all the meetings, but will not be expected to attend meetings other than those of their division because of the distance separating the two divisions.

Membership in the California Electragists will provide full membership in the Association of Electragists, International, license to use the name Electragist, and limited data service. The executive board of each division shall determine who shall be eligible to membership. The A.E.I. has agreed to accept no new members from either division unless the application comes through the California Electragists.

Each division may permit local district organizations to be formed within its division. However, even though all the members of a local association are Electragists, they cannot use the word Electragists in the title of the organization without securing the approval of the executive committee.

Dues in the California Electragists will be uniform over the entire state, to wit: $12 per year where the gross annual business is less than $20,000, and $24 per year if over $20,000. Application blanks must be signed by each new member before the A.E.I. will issue an Electragist license.

The southern division office is temporarily located in the office of the California Electrical Bureau, 631 Cotton Exchange Building, Los Angeles. C. J. Geisbush is executive secretary. Applications for membership, requests for supplies or services, or inquiries relative to the California Electragists from within the southern division should be made to Mr. Geisbush.

The northern division office is located at 318 Call Building, San Francisco. Walter F. Price is executive secretary. Until the election of a new president he will continue to deal with the New York office of the A.E.I., sending in the dues for all state members, etc.

F. E. Elser of Los Angeles was appointed by President Lemoge to represent the Electragists of the southern division on the advisory committee of the California Electrical Bureau during the illness of H. H. Walker.

The California Electragists have offered to assist the California Electrical Bureau in the execution of the Red Seal Plan of electrical wiring as soon as definite arrangements are made for handling the plan in California.

Boblet Manufacturing Company, 628 Main Street, Chico, has become recently a member of California Electragists.

Association of Electragists Elects New President

Joseph A. Fowler, Fowler Electric Company, Memphis, Tenn., has been elected president of the Association of Electragists, International, succeeding James R. Strong, who has retired from active leadership after serving the Association for many years. Mr. Fowler has been an active worker in association work for years. He was executive committeeman from the southern division, and has been chairman of the committee on liability insurance. He also was secretary of the state association of Tennessee.

JOSEPH A. FOWLER

Pacific Division Executive Committeeman Attends Meeting of Association of Electragists, International.—Clyde L. Chamblin of the California Electrical Construction Company, San Francisco, attended the semi-annual meeting of the executive committee of the Association of Electragists, International, held in New York, March 16 and 17, as the executive committeeman from the Pacific division. He also attended the annual meeting of the board of directors of the Society for Electrical Development held on March 20. Mr. Chamblin is a director representing the contractor-dealer group. He went by the way of Detroit, where he visited the plant of the Ford Motor Company as a guest of Ernest McCleary, executive committeeman from the Great Lakes district. He returned through Los Angeles where he attended a meeting to complete the details of a unified association of California Electragists.

California Electragists to Hold Quarterly Meeting in Visalia.—Announcement just has been made that the next quarterly meeting of the California Electragists will be held at the Hotel Johnson, Visalia, on Saturday, May 9, 1925. Details of the meeting will be announced in the near future.

Frank Sherman, electragist of Corning, Calif., recently spent a week in San Francisco. While there he attended a meeting of the San Francisco Association of Electrical Contractors and Dealers.

Electrical Construction Company, 110 North School Street, Lodi, recently has become a member of the California Electragists.

H. W. Jacobs, electrical contractor of Santa Rosa, was a recent visitor to San Francisco.

On the occasion of the retirement of
James Remsen Strong
from the Presidency of the
Association of Electragists
International
it is the pleasure of the Executive Committee and Past Presidents of the Association, whose signatures appear below, who act not alone for themselves but also for their Association, to bear witness to his years of service.
His intelligent initiative, brilliant ability, untiring energy, faithful service and ardent devotion in the performance of his duties
Has Been An Invaluable Asset Through The Years.
The noble qualities of heart and mind which he has shown on all occasions, not only in his work with the Executive Committee, but also as the presiding officer of the Association, has endeared him as
Our Leader.
He has been to all the Association,
Guide, Philosopher and Friend.
Past Presidents
Executive Committee
March 16, 1925
Secretary

Illuminated testimonial which was presented to James Remsen Strong, retiring president of the Association of Electragists, International.

James Remsen Strong Retires as Electragists' President

As an expression of the high regard in which James Remsen Strong, retiring president of the Association of Electragists, International, is held by his fellow members in the electrical profession, an illuminated testimonial was presented to him by the association at a dinner given in his honor March 16 at the Building Exchange, New York City. The dinner was attended by seventy-five of the leading men of the industry.

Mr. Strong has held the office of president of the association from 1905 to 1908 and from 1921 until now. Among the speakers who told of his long record of unselfish service were Samuel Hilton of Syracuse; John Hatzel, president of Hatzel & Buehler, Inc., New York, both charter members of the organization; Ernest McCleary, second president of the A.E.I. and present executive committeeman; Charles L. Eidlitz, first president and now head of the New York Electrical Board of Trade, and William L. Goodwin, of the Society for Electrical Development. The testimonial was presented by Mr. Eidlitz.

Joseph A. Fowler, newly elected president of the Association of Electragists, International, presided as toastmaster.

Vital Message to Contractors in President's Statement

Joseph A. Fowler, newly elected president of the Association of Electragists, International, issued the following statement following the executive committee meeting of the Association recently held in New York:

"That there may be no question concerning the attitude of the Association of Electragists, International, your executive committee on March 17 unanimously agreed that the only trade policy that can be justified as economically sound is that the distribution of electrical merchandise should be from manufacturer through jobber to contractor and dealer to consumer.

"This determination of your executive committee follows the investigations of our trade policies committee which brought out some of the evils surrounding the orderly distribution of electrical materials.

"For some time contractors and contractor-dealers have complained bitterly about the practice of manufacturers and jobbers bypassing them at equal or even lower prices.

"The existence of this situation is not denied but the counter charge is made that the contracting branch of the industry has not kept its skirts clean nor has it had a definite policy. It must be admitted that many contractors and dealers have sought to eliminate the jobber in obtaining their supplies.

"We have thus recognized the orderly principle of distribution which has been intrumental in building electrical business. Without this direction to the movement of supplies there can only be incrimination, price cutting and bad feeling.

"Any break down of this principle must result in a market based on price only. When price is the governing factor, service has little opportunity to make headway.

"If the electrical industry is to maintain its reputation for dependability and service it must do nothing to build a market solely on price.

"If the disturbing factors which have entered into the movement of electrical merchandise from producer to consumer are to be eliminated, this orderly principle of distribution must not only become our preachment but our practice.

"With this policy we maintain that a channel of distribution can be set up that is fair, equitable, sound and logical. As an evidence of good faith every member of our Association should recognize his individual responsibility in making the policy effective. If we are able to crystalize this attitude in the individual conduct of our members we believe that the manufacturer and the jobber will each feel that he has the corresponding obligation and will cooperate to the fullest extent in the realization of the ideal.

"Associations may pass resolutions but resolutions can only be realized through membership support."

Electrical Contractors of North Bay District Form League

An organization of the electrical contractor-dealers and others in the industry of the North Bay district was recently formed at a meeting held at the Napanee Grill, in Napa, Calif. The chief purpose of the organization will be to foster a higher standard in electrical installations and to promote the industry in all of its phases. Earl Wilson, electragist of Napa, was elected president of the organization; and R. McMullin, Pacific Gas and Electric Company, Napa, was selected secretary-treasurer. Directors of the new organization were named as follows: H. E. Brillhart, Napa; H. E. Decker, Calistoga; Edward E. Pierce, Vallejo Light & Power Company, Vallejo; B. L. Taylor, Taylor Electrical Company, St. Helena, and A. J. Martison, Radio Electrical Shop, Sonoma.

Three names were proposed for adoption as the name of the new organization, but were not acted upon. They were: "Tri-County Electrical League;" "North Bay Electrical Development League;" and the "Napa Valley Electrical Development League."

The Bank of Napa was selected as the

depository for league funds. This selection was made because the bank is completely equipped with electricity, using electricity for heating purposes, as well as being supplied with a large number of convenience outlets for operating electrically operated adding machines, comptometers and similar equipment.

Representatives were present from Napa, San Rafael, Vallejo, Sonoma, St. Helena and Calistoga. LeRoy H. Crandall of the California Electrical Bureau of San Francisco arranged the details for the meeting.

Executive Committee Meeting Produces Real Results

One of the most important meetings of the executive committee of the Association of Electragists, International, was held in New York City on March 16 and 17. A clean-cut policy of distribution, a definite direction to all-metal code activity, and recommendation of separate lighting and appliance circuits were among the outstanding results of this meeting.

After a thorough discussion in which the need for constructive leadership was pointed out the resolution on trade policy was passed unanimously, based on a report made a year ago by the trade policy committee which outlined generally existing conditions. The resolution follows:

That the trade policy committee and the president be instructed to carry out vigorously the policy of this Association; that is, that distribution shall be free from manufacturer through jobber through contractor and dealer to consumer. This it will be noticed is quite definite. The full force will be realized more fully after reading the statement of President Fowler which appears separately.

The committee believed that greater progress would be made if its activities on all-metal code were directed toward the most logical places rather than if they were to attempt too much and so meet a possible antagonism by trying to cover all wiring at the present time. For that reason the committee voted: That until further action the activities of the Association toward all-metal code be directed to the furthering of all-metal standards in congested districts and in certain classes of buildings to be further determined.

The mistreatment of branch circuits by overfusing was discussed and the committee requested: That the executive committee request our representative on the electrical committee to work for a code requirement that lighting outlets for both ceiling and brackets be on circuits independent of all other outlets. It was brought out that non-interchangeable fuses for lighting circuits would not be prohibitive financially.

Californians Are Appointed to National Committees.—California electragists are taking an active part in the affairs of the Association of Electragists, International, and two of them have been recently appointed to important committees by President Fowler. H. H. Walker, H. H. Walker Company, Los Angeles, has become a member of the business conduct committee, and Clyde L. Chamblin, California Electrical Construction Company, San Francisco, is chairman of the membership committee.

Pacific Coast Electrical Association

Final Technical Section Conclave Held at Fresno

Year's Affairs Are Rounded into Completion in Preparation for the National Convention in June

Technical Section activities of the P.C.E.A. for the year 1924-5 culminated in the meetings held at Fresno, Calif., March 25-27. These meetings were of especial importance because the coming convention of the National Electric Light Association to be held in San Francisco in June made necessary the completion of work in hand now instead of in June as is the usual custom.

The gathering totaled 112 men representing practically every technical phase of the electrical industry. Keen, active interest was displayed by all of the delegates, and the quantity and quality of constructive work accomplished and reported upon reflected at once the time and effort that have gone into the important projects taken up by the various committees. In many instances the committee work has been of such nature as to be of value not only to the West, but to the East as well. Two of the committee reports will go in as the report for the National Technical Section on the subjects involved.

The Cleveland meeting held in February was reported upon by all six of the Pacific Coast delegates for the particular branch in which each is interested. All were unanimous in proclaiming the obvious value of these intersectional meetings to individual, association and company alike.

The apparatus bureau has had a full program for the past year and has carried on studies in several fields. Interrupting capacities of oil circuit breakers and possible means for increasing the same, as well as means for determining the actual ratings of those of local manufacture, have been a live subject. This is also true of the subjects of the standardization of distribution transformers and appurtenant equipment and of relays and relay application. Proper grounding methods for stations and equipment, fire-fighting equipment and automatic substations all have come in for their share of thought and discussion. With a view toward assisting the continuity of the work of the bureau, several subjects were suggested for next year's program. These included Pacific Coast practices in distribution and transmission substations; a further study of grounds and grounding methods; further studies of oil circuit breakers and actual system tests upon them; observations and records covering the performance of breakers; studies into the question of the best voltages for distribution transformers; relay performance and application studies; high tension fuses, and possibly also a study of carrier-current telephony.

Routine telephone matters and a review of several outstanding typical cases have occupied the time of the inductive co-ordination bureau. Radio disturbance is a subject that is demanding much time and effort on the part of the bureau. It is brought out that many individual efforts are under way at the present time, and it is the desire and object of this bureau to study them all and bring about an exchange of information so that the best equipment and most economical methods may be adopted by all parties interested. For next year's work has been suggested a study into the economics of tracing radio disturbances; the tabulation of all data concerning cases of trouble; the classification of causes and noises; and the undertaking of authentic publicity giving reliable information concerning radio noise troubles to offset the many stories now being published for more or less political purposes by unqualified persons.

Matters pertaining to and arising from the state safety orders have been sufficient to keep the safety rules bureau busy. Much thought and effort has been given to the promulgation of a satisfactory code of rules. It is believed by this bureau that each power company should have a qualified representative in the State Association of Electrical Inspectors. In this way a greater cooperation could be brought about. For next year it is recommended that a further study of safety orders and their application, and of national code changes be made, and the safety switch investigation be continued.

COMING PACIFIC COAST ELECTRICAL ASSOCIATION MEETINGS

Commercial Section—
Conclave and Executive Meeting—San Joaquin Light & Power Building, Fresno, Calif.
April 3-4, 1925

Pacific Coast Electrical Association—
Annual Meeting—San Francisco, Calif.
June 15, 1925

Six subcommittees have been carrying on as many lines of work under the overhead systems bureau. Line construction costs have been under consideration, and it was recommended that this subject be carried over through next year. Recent tests on steel and wood poles have brought out many interesting data which the committee is rounding into shape for the national committee. The most important division of the work of this bureau has been the revision of the line construction rules contained in General Order 64 of the California Railroad Commission. This work has been done under the direction of J. E. Macdonald, who has put much time and effort into the project of bringing out a clear, concise code and one satisfactory to all parties concerned.

A plant layout study covering twelve Pacific Coast hydro plants has been the endeavor of the hydraulic power bureau this last year. This report is now com-

plete and will be the report of the national committee on that subject.

Underground cables are in experimental operation in Italy at a phase-to-phase voltage of 135,000, and 66,000-volt, single-phase cables have been in operation in the East for some time without interruption to service. A study of these and allied subjects has occupied the time of the underground systems bureau, which expects to continue the study next year. Specific subjects suggested include cable terminals; kenotron tests; suitable duct material and other questions.

Information of widely different classifications has been supplied by the meter bureau to the national committee, although no specific subject was assigned to the local bureau. High-tension metering for operating purposes; the proper size of meter for various services; the proper test periods for different classes of metering equipment and state safety orders are some of the subjects covered during the past year. Several subjects are recommended for the coming year's work. Among these are the metermen's course; relay maintenance; means of securing a sine wave current for relay testing, and the study of new devices and meters recently brought out.

Accident prevention work is of a slightly different nature than that of the other bureaus, but is nevertheless of equal importance for it is dealing with the human element of the industry. The work of this bureau is primarily that of education.

The prime movers bureau has worked up three subjects for the national committee during the last year. Next year's proposed schedule includes a study of oil burning; condenser leakage; cooling towers and ponds; heat balance, and station auxiliaries.

Progress for the Technical Section as a whole also must be recorded. As a means of increasing the efficiency of the section and the various bureaus it was decided to adopt the plan of appointing a vice-chairman for each bureau. Under this scheme the vice-chairman is to assume such duties at the direction of the chairman as will familiarize him with the details of the activities of the bureau throughout the year. The vice-chairman then will become the chairman for the succeeding year. He will be posted already upon matters and thus will be able to carry on the work of the bureau without interruption. In the past the delay and lost time due to yearly reorganization and the inertia in getting under way materially have reduced the efficiency of the organization.

Another development that may be of interest is the fact that the term "bureau" has been relegated to the past. It was believed by the executive committee that the term was unsuitable for the Technical Section. In the future the divisions of the Technical Section will be known as "committees."

The San Joaquin Light & Power Corporation, collectively and through several of its individuals, contributed unstintingly to the success of this series of meetings.

The San Joaquin Power Club staged a most successful social evening and dance following the general evening meeting of the technical delegates. Following the close of the session Friday afternoon, the visitors were treated to a demonstration of the hot-line handling tools developed by certain of the San Joaquin organization. With the use of the special, long-handled tools line wires were tied to insulators, dead-end insulators were replaced, and new-line taps were put on. The demonstration was complete and most interesting.

Under the direction of R. M. Peabody a party of the men spent Saturday and Sunday in a tour of the Big Creek plants and an inspection of the lower end of this project.

Announce Prizes for Employees' Home Lighting Contest

Entries in the Employees' Home Lighting Contests recently conducted by many of the central stations of the West were due in the hands of the judging committees of the companies on March 31. Primers that are to be entered in the contest conducted by the P.C.E.A. must be in the hands of V. W. Hartley, chairman, Home Lighting Contest Committee, 314 Rialto Building, San Francisco, by April 11. The paper that is judged the best by the P.C.E.A. judges will be sent to the N.E.L.A. to be entered in the national contest.

A $50 prize will be awarded by the lighting bureau of the Commercial Section of the P.C.E.A. The N.E.L.A. list of awards includes: a $500 first prize; a $300 second prize and a $200 third prize. Announcements of the winners in the national contest will be made at the N.E.L.A. convention to be held in San Francisco, June 15-19.

P.C.E.A. Commercial Section to Meet.—An executive and conclave meeting of the Commercial Section of the P.C.E.A. is to be held in Fresno, Calif., April 3-4. This will be the last meeting of the section prior to the annual convention of the association to be held in San Francisco June 15. Final reports of all bureaus will be presented at this meeting of the section. Meetings will be held in the San Joaquin Light & Power Building.

Book Reviews

THE STANDARD ELECTRICAL DICTIONARY

By T. O'CONNOR SLOANE, A.M.,E.M., Ph.D., author of "Arithmetic of Electricity," etc., with additions by Prof. A. E. Watson of Brown University. 790 pages, 497 illustrations. $5. Norman W. Henley Publishing Company, New York, N. Y.

Sloane's Standard Electrical Dictionary is in reality something more than just a dictionary. It is almost an encyclopedia. Words and phrases are dealt with in a manner which gives more than a mere definition as the description of various articles are comparatively lengthy and give details beyond the mere meaning of the word or phrase in question.

In this work the author has evidently endeavored to touch at least briefly all recognized branches of the electrical industry, and in a non-technical manner understandable to even the person not intimately connected with the industry. The book is of more value to the practical electrical man than it would be to the trained engineer or technician. To the student or one interested in the early developments of electricity this electrical dictionary would be a source of interesting information.

Three sections make up the book. The first section is practically a reprint of earlier editions evidently and gives detailed information concerning the earlier understanding and application of electricity. The second section covers quite completely the later developments in the electrical art, while the third section is a rather complete dictionary of radio terms.

Many words and phrases pertaining to electricity and which are not found in the usual publication are described or defined. Many illustrations serve to clarify the text and to give a better understanding of representative subjects.

INDUSTRIAL ELECTRICITY

By CHESTER L. DAWES. 371 pages, 267 figures. $2.25. Published by McGraw-Hill Book Company, New York, N. Y.

From time to time books covering the practical application of electricity appear, but this text is outstanding, both in the thoroughness with which the subject is treated and the simplicity of the descriptions involving apparatus.

This volume, which covers direct currents only, has been prepared to fit the needs of students in technical high schools and other schools not of collegiate grade. As the title of the book indicates, the industrial applications of electricity are stressed throughout. According to the author his intention has been "to give a bird's eye view of electrical engineering and its problems to the student who is beginning to study the subject, either by himself, or in courses of the grade of those given in the technical high schools."

The first few chapters of the text cover Magnets and Magnetism; Electromagnetism; Resistance; Ohm's Laws and the Electric Circuit; and Battery Electromotive Forces and Kerchhoff's Laws. Then follow practical applications of these principles in the form of chapters on Primary and Storage Batteries; and Electrical Instruments and Measurements. Principles are again treated in the chapters covering the Magnetic Circuit; Electrostatics and Capacitance. Generator and Generator Characteristics and Motors and their characteristics are treated in the next three chapters, followed by a final chapter on Losses, Efficiency and operation of direct current machinery. The last fifty pages contain several hundred questions and problems which should add considerably to the value of the book.

Direct current power distribution is not treated, as it is intended that this subject be treated with alternating current transmission in a later book covering the industrial applications of alternating currents.

The book is quite up-to-date in all respects as evidenced by material being included such as the Delco Starting Light System and it should fill admirably the purpose for which it is intended, and can no doubt be well used as a reference book by men engaged in the everyday operation of electrical machinery.

E. R. S.

Meetings

Oakland Electric Club Elects Officers for Ensuing Year

At a recent meeting of the Electric Club of Oakland, Calif., Ben C. Hill, superintendent of electrical inspectors of the city of Oakland, was elected president of the organization. Other officers elected at this time were: Vice-president, Walter Spencer, Spencer Electric Company; secretary-treasurer, Edgar C. Fisher, Joint Pole Association. The executive committee members are: Romaine Myers, consulting engineer; Ross M. Gilson, Ross M. Gilson Company; Edgar Powers, heating specialist. The Oakland Electric Club meets every Monday noon at the Hotel Oakland.

Four New Prizes Are Offered to N.E.L.A. Membership

Four new prizes have been added to the list open to the membership of the N.E.L.A. since the 1924 convention, and the awards in these contests will be made for the first time at the annual convention to be held in San Francisco, June 15-19. The new prizes total $1,500 in value and bear the names of their donors, Martin J. Insull, James H. McGraw, and Arthur Williams, with the exception of the H. M. Byllesby prize, which is donated by the H. M. Byllesby Company in memory of its late president.

The total list of prizes now open to members of the association is as follows:

The Doherty prize—gold medal.

The Harriet Billings prize—$50.

The H. M. Byllesby prize—$500, divided thus: $250 first prize; $150 second prize; $100 third prize.

The Martin J. Insul prize—$250.

The James H. McGraw prize—$500, divided thus: $250 first prize; $150 second prize; $100 third prize.

The Arthur Williams prize—$250.

Frank W. Smith educational prize—$100.

The Insull Medal—for life-saving by resuscitation.

A complete listing of the qualifications of contestants, together with contest rules appears in The N.E.L.A. Bulletin, February, 1925, pp. 121-2. All papers to be entered in the contest must be in the hands of the secretary of the association not later than April 15.

Plans of Pacific Coast A.S.M.E. Meeting Announced

Plans are well in hand for the Pacific Coast A.S.M.E. regional meeting, which is to be held in Portland June 22-25. The meeting follows closely upon the annual convention of the National Electric Light Association in San Francisco June 15-19, and an invitation to visit the Portland meeting will be tendered to those in attendance at the convention.

Papers to be read at the technical sessions include, "The Utilization of Wood Waste," "The New 30-Inch Suction Diesel Dredge," "The Mechanical Engineering Features of the Long-Bell Lumber Company's New Saw Mill at Longview, Wash.," "Electric Logging," "Steam Logging," "Cable Systems in Recent Logging Developments," and "The New Hydroelectric Plant of the Portland Electric Power Company."

Inspection trips will be made to the Oak Grove power plant, the hog fuel power plants in and around Portland, and the Longview Lumber Company's mill, while sightseeing tours to points of scenic attractiveness and other entertainments have been planned for the visitors.

A.I.E.E. Nominations Announced.—At a meeting of the board of directors of the American Institute of Electrical Engineers held in New York March 13, the following were nominated as candidates for office for the ensuing year: President—Dr. Michael I. Pupin, Columbia University, New York; vice-presidents: No. 2 (Middle Eastern District)—A. G. Pierce, Cleveland; No. 4 (Southern)—W. E. Mitchell, Birmingham; No. 6 (North Central)—H. S. Sands, Denver; No. 8 (Pacific)—P. M. Downing, San Francisco; No. 10 (Canada)—W. P. Dobson, Toronto; managers: M. M. Fowler, Chicago; E. C. Stone, Pittsburgh; H. A. Kidder, New York; treasurer: G. A. Hamilton, Elizabeth, N. J.

COMING EVENTS

Technical Section, Northwest Electric Light and Power Association—General Meeting—
Spokane, Wash.
April 16-17, 1925

Southwestern Public Service Association—
Annual Convention—Rice Hotel, Houston, Texas
May 5-8, 1925

Electrical Supply Jobbers' Association—
Annual Convention—Hot Springs, Va.
June 1-6, 1925

Associated Manufacturers of Electrical Supplies—
Annual Meeting—Hot Springs, Va.
June 8-13, 1925

Northwest Electric Light and Power Association—Annual Convention—
Gasco Building, Portland, Ore.
June 12, 1925

National Electric Light Association—
Annual Convention—San Francisco, Calif.
June 15-19, 1925

Northwest Technical Section to Meet in Spokane April 16

The second annual general meeting of the technical section of the Northwest Electric Light and Power Association will be held at Spokane April 16 and 17. During the two-day session, papers will be presented by some member of each subcommittee of the section, and general discussion on the various subjects presented will be invited.

H. H. Schoolfield, chief engineer, Pacific Power & Light Company, Portland, announces that this meeting is open to everyone desiring to attend and cordially extends an invitation to all interested.

Tentative Dates Set for New Mexico Convention.—The dates of April 20, 21 and 22 have been set tentatively for the holding of the New Mexico Electrical Association convention at Albuquerque that was postponed on account of important matters confronting the principal central stations at the time. Arthur Prager, general manager of the Albuquerque Gas & Electric Company, is in charge of arrangements for the convention.

Northwest Convention to Be Held in Portland June 12

At a meeting of the executive committee of the Northwest Electric Light and Power Association held at Portland March 9, 1925, it was decided to hold the 1925 convention of the association June 12, 1925, in the auditorium of the Gasco Building, Portland. At this time the reports of committees will be received, and an executive session will be held for the election of officers for the ensuing year.

Plans for a convention of the usual size and duration were abandoned on account of the convention of the National Electric Light Association in San Francisco, June 15, which will be attended by many members from the Northwest.

Date of Southwestern Convention Changed.—The Southwestern Public Service Association will hold its annual convention at Houston, Texas, May 5-8, 1925, instead of May 11-15. The date has been changed to avoid conflict with other conventions of interest to public utility men in the Southwest. Headquarters of the convention will be at the Rice Hotel, and reservations will be handled by the hotel management. The general convention committee is as follows: W. E. Wood, chairman, Houston Electric Company; S. R. Bertron, Jr., Houston Lighting & Power Company; F. D. Murphy, Houston Gas & Fuel Company; A. F. Townsend, Eastern Texas Electric Company, Beaumont; F. C. Armbruster, Southwestern Gas & Electric Company, Shreveport; B. F. Cherry, Weatherford Water, Light & Ice Company; G. W. Fry, president, West Texas Utilities Company, and E. N. Willis, secretary.

Electrical Bowling League Organized in Los Angeles.—A bowling league, consisting of teams from electrical jobbers in Los Angeles, has been organized in that city and on March 19 had completed one-half of the series that is to be played. Nine teams representing nine jobbing organizations and one made up of manufacturers' representatives are enrolled in the league. Tournaments are held on Thursday evenings at Jensen's Recreation Centre bowling alleys. The league was organized in December of last year. It is the intent of the organizers to include all branches of the industry in the league which will be formed next year. J. A. Sines, representative of the Chicago Fuse Manufacturing Company in Los Angeles, is organizer and secretary-treasurer of the league.

P.C.E.A. Papers Must Be in Secretary's Hands by April 1.—Papers prepared by the members of the Accounting, Commercial, Public Relations, Publicity, Purchasing and Stores, and Technical Sections of the P.C.E.A. must be in the hands of S. H. Taylor, secretary of the association, by April 1 to permit their publication in the June 1 issue of the Journal of Electricity. The Executive Committee of the association has requested every section chairman to endeavor to comply with this ruling. The papers will be given to the papers committee for editing before they are published. Papers should be sent to 527 Rialto Building, San Francisco.

Personals

O. B. Stubbs, president of the Stubbs Electric Company, Portland, a pioneer house in the electrical industry in the Northwest, was elected chairman of the Pacific Coast division of the Electrical Supply Jobbers' Association at the recent convention of that association at

O. B. STUBBS

Del Monte, Calif. Mr. Stubbs was born in Lawrence, Mass., and received his education at Concord, N. H., graduating in civil engineering. He came West in 1883 and became associated with the chief engineer of the old Oregon Steam Navigation Company, which was the forerunner of the Oregon-Washington Railroad & Navigation Company, the western link of the Union Pacific system. The original company operated boats between Astoria, Ore., and Celilo Falls on the Columbia River with a short rail portage by-passing the cascades at the site of the present Cascade Locks. Mr. Stubbs later worked for a time on the Cascade Locks project. In 1896 he started an electrical contracting business in Portland. His first large job was the installation of the electrical equipment on a government ship used for transporting horses to Manila during the Spanish-American War. He later took on the retailing of electrical appliances, and finally in 1910 entered the jobbing field, in which he has established his company as one of the leading electrical jobbers of the Northwest.

R. D. Thomas, associated with the Federal Electric Company of Denver, was a recent visitor in San Francisco in the interests of his firm.

Frank Dana, assistant general manager of the Electric Flow Meter Company, of Kansas City, is in San Diego supervising the installation and tests of some of his company's products at the San Diego Consolidated Gas & Electric Company's gas plant.

Carl Burgess, advertising manager of the Los Angeles district for the Westinghouse Electric & Manufacturing Company, paid San Diego a short visit recently, renewing acquaintances made at the convention last summer at Coronado.

C. D. Monteith, formerly in charge of the electric transportation bureau of the Pacific Gas and Electric Company, San Francisco, has been appointed lighting sales engineer for that company.

John C. Hoyt, chief of the surface water division of the water resources branch of the United States Geological Survey, Washington, D. C., was a recent visitor in Salt Lake City for the purpose of conferring with **A. B. Purton,** district engineer of the water resources branch of the Geological Survey. Mr. Hoyt was a delegate to the world power conference at London a short time ago.

C. F. Norton, sales manager of the Howell Electric Motors Company, Howell. Mich., represented in San Francisco, Los Angeles and Seattle by the Garland-Affolter Engineering Company, was recently on the Pacific Coast making a survey of the local motor situation.

C. Reeves has been appointed assistant for **G. O. Hodgson,** sales manager of the Edison Lamp Works at Denver.

Frank Perry, of the Wong & Perry Electric Company, Boston, was a recent visitor on the Pacific Coast.

R. C. Newhouse, of the Allis-Chalmers Manufacturing Company, Milwaukee, recently spent some time in San Francisco.

Dr. Michael I. Pupin, of Columbia University, New York, has been nominated for president of the American Institute of Electrical Engineers. **P. M. Downing,** vice-president in charge of electrical construction and operation, Pacific Gas and Electric Company, San Francisco, was nominated for vice-president for the Pacific district.

John J. Gibson, vice-president. Westinghouse Commercial Investment Company, New York. was recently in San Francisco in the interests of his company.

Floyd Averill, president Fobes Supply Company, Portland, was a recent visitor in San Francisco.

W. H. Kaemper of Listenwalter & Gough and **W. J. Ettiene,** associated with the Zenith Radio Corporation, both of San Francisco, left recently for Chicago in the interests of their respective firms.

B. J. Wildman, Pacific Coast manager of Moe-Bridges Company, San Francisco, recently departed on a tour of the Northwest in the interests of his company.

G. R. Henninger, associate editor of the Journal of Electricity, paid San Diego a visit March 16 and 17, taking in the St. Patrick's party of the San Diego Electric Club while there.

Felix Van Cleef, of Van Cleef Brothers, Chicago, recently spent some time in San Francisco while on a tour of the Pacific Coast.

J. P. Fairbank, extension specialist in agricultural engineering, University of California, recently presented a kitchen lighting demonstration at the Arcade School in Sacramento.

W. A. Brackenridge, vice-president, Southern California Edison Company, Los Angeles, was a recent visitor in San Francisco.

Arch Miller of the Miller-Seldon Electrical Company, Detroit, recently visited San Francisco.

M. W. Kellogg, head of the M. W. Kellogg Company of New York City, spent some time in San Francisco recently in the interests of his concern.

H. W. Crozier, hydroelectric engineer of the San Francisco office of Sanderson & Porter, recently was in Aberdeen, Wash., on business connected with the Grays Harbor Railway & Light Company. While there he addressed the Aberdeen Rotary Club on the subject of power possibilities in the Grays Harbor country.

Harris J. Ryan, professor of electrical engineering at Stanford University, Palo Alto, Calif., has been made a doctor of laws of the University of California, Berkeley, in recognition of his services in the furtherance of electrical development in general, and of his contributions to existing data on high-voltage transmission and phenomena in particular. The decree was conferred March 23 at the annual charter day celebration at the University of California. Professor Ryan graduated from Cornell University with a degree of electrical engineering, and since then has devoted himself to the advancement of that science. At Stanford University he has spent the greater part of his time in research work in connection with high-voltage transmission. He has developed a high-voltage wattmeter for measuring corona and other power losses on high-voltage circuits, and this instrument has been perfected to such an extent that the power of a single brush discharge and power losses as small as a quarter of a watt may be measured on a 220-kv. line. He is considered one of the foremost authorities on the subject of corona, and his cathode ray oscillograph studies, which he has been pursuing since 1900, have added much to the knowledge of the dielectric properties of air and the phenomena of corona. As soon as the new 2,000,000-volt laboratory to be erected at Stanford (Journal of Electricity, March 15, p. 222) is completed,

HARRIS J. RYAN

Professor Ryan will be in charge of all experimental work there and will devote his entire time to research in connection with the new equipment. Aside from his work at the university, he has been active in an advisory and consulting capacity. He has been consulting engineer of the Los Angeles Aqueduct; a director of the Supersonics War Laboratory, National Research Council; and U. S. Government delegate to the International Electric Congress. He is a past president of the American Institute of Electrical Engineers and a member of many other leading and scientific societies.

H. E. Sandoval, for twelve years associated with the Pacific Gas and Electric Company, San Francisco, resigned April 1, 1925, to become president and general manager of the Sandoval Sales Company, a newly organized $100,000 corporation. The business of the firm will be that of manufacturers' agents, and already it has been appointed executive distributor of Wesix electric products for northern California. Offices and display room will be maintained at 115 Jessie Street, San Francisco. Mr. Sandoval received the degree of bachelor of science in electrical engineering from the University

H. E. SANDOVAL

of California in 1912. He became associated with the Mount Whitney Light & Power Company, Fresno, Calif., and remained with them until 1913 when he was employed by the Pacific Gas and Electric Company. He is familiar with all phases of the central-station branch of the industry; for the past several years he has been manager of electric sales. Mr. Sandoval is well known to members of the electrical industry and has been active in its development and betterment.

E. C. Headrick, director of the Association of Electragists, International for the Rocky Mountain district, departed recently for New York where he will attend the national executive committee meeting. On his return he plans to stop over at several Eastern cities.

John Farley succeeds **C. D. Monteith** who recently resigned as secretary-treasurer of the Electric Transportation Association, San Francisco.

W. F. Brainerd, formerly field representative of the California Electrical Bureau in southern California, has been appointed assistant secretary of the bureau with direction over the Los Angeles activities and the field staff in the south.

A. W. Leonard, president, **H. J. Gille,** general sales manager and **F. W. Brownell,** comptroller, Puget Sound Power & Light Company, Seattle, recently spent some time in San Francisco in the interests of their concern.

L. W. Sherman succeeds **R. N. Phelan** as the new secretary-treasurer of the Electrical Contractors and Dealers' Association of Sacramento, Calif. Mr. Sherman was formerly with the Latourrette-Fical Company of that city and more recently employed as superintendent of mechanical and electrical construction at the Veterans' Hospital, Livermore, Calif.

P. F. Apfel, president of the Electric Heating & Manufacturing Company, Seattle, recently visited California and spent considerable time with his representatives, the Wholesale Electric Company in San Francisco.

H. A. Norris, architect of Sydney, Australia, who has come to the United States to study American building construction methods, is the guest of the Westinghouse Electric & Manufacturing Company, San Francisco. He will be entertained also by some of the company's Eastern offices during his tour.

W. P. Stranborg, publicity manager, Portland Electric Power Company, and chairman Utility Advertising Section, Associated Advertising Clubs of the World, was a recent visitor in San Francisco.

S. L. Albaugh, Los Angeles representative of the Johns-Pratt Company, was a visitor to San Diego early in March. He was a guest of the Electric Club while there.

Kenneth E. Clarke has been appointed vice-president and general manager of the United Electric Company, Canton, Ohio. He was formerly general manager of Altorfer Brothers, Peoria, Ill.

A. C. McMicken, sales manager of the Portland Electric Power Company, Portland, left for New York City recently to attend a meeting of the Commercial National Section of the N.E.L.A.

Carl F. Uhden, formerly chief engineer of the Gorge Creek development of the Skagit project, Seattle, has opened an office at 1409 Alaska Building, Seattle, as a consulting and contracting engineer.

Sam Gates, general manager of the Los Angeles division of General Electric Company, together with Mrs. Gates and L. Spring, merchandising specialist of the company, were the outstanding out-of-town guests of the Electric Club's St. Patrick's party, March 17.

A. F. Blecksmith, district sales agent in Los Angeles for the Duncan Electric Manufacturing Company of LaFayette, Ind., was recently a visitor in San Francisco.

Walter Schmidt, electrical engineer, Los Angeles, recently spent some time in San Francisco.

N. B. Osborn, representing Landers, Frary & Clark in Washington and Oregon, was in San Francisco recently, having been called there by the death of his mother who passed away in that city.

H. G. Kelsey succeeds **Frank Thomas** as sales manager for the Grays Harbor Railway & Light Company, Aberdeen, Wash. Mr. Thomas has gone into business as a partner under the firm name of Phillips & Thomas, dealers in electrical supplies.

E. L. Crider, Puget Sound Power & Light Company, Seattle, was a recent visitor in San Francisco.

T. A. Wood, formerly connected with the Cerro de Pasco Copper Corporation at Oroya, Peru, is now field engineer for the Committee on the Relation of Electricity and Agriculture under Prof. B. D. Moses, with headquarters at Davis, Calif.

L. D. McFarland, president of L. D. McFarland Company, Ltd., Sandpoint, Idaho, extensive producers of cedar poles, accompanied by his family, recently stopped over at San Francisco for a few days while en route to the Hawaiian Islands.

Norman B. Hickox, for several years past assistant general sales manager, Curtis Lighting, Inc., Chicago, has been made vice-president of that company in charge of sales.

W. H. Huttinger, chief engineer, Electric Power Equipment Corporation of Philadelphia, is touring the Pacific Coast states in the interests of his company.

W. H. McGrath, vice-president Puget Sound Power & Light Company, Seattle, recently left for a month's visit in California.

Capt. G. B. Baldwin, publicity department, Pacific Gas and Electric Company, San Francisco, spoke on "Hydroelectric Development in Northern California" at a recent meeting of the Business and Professional Women's Club of that city. Music was furnished by the P. G. and E. Trio.

Obituary

Vernon Wilder, superintendent of the Bishop district of The Southern Sierras Power Company, Riverside, Calif., died suddenly in the latter city recently while there on business. He was also at the time of his death general superintendent of the Interstate Telephone & Telegraph Company, a subsidiary of The Southern Sierras company, and was widely known throughout Owens River Valley. After graduation from college Mr. Wilder entered the telephone business, and from 1898 to 1912 was connected chiefly with the Bell Telephone Company as exchange manager, traffic

VERNON WILDER

manager and division traffic superintendent, with two years as chief electrician of the Hanolton Light & Water Company. In 1914 he became traffic chief of the Interstate company, with headquarters at Bishop, being appointed local superintendent the same year. In 1920 he was promoted to the two positions he held at the time of his death. He was also president of the Bishop Chamber of Commerce and chairman of the Bishop Board of Elementary Schools. Mr. Wilder was an efficient official and a valued leader in civic affairs, and his passing is a loss to the community.

TRADE NOTES

The Tacoma Electric Company, Tacoma, was recently damaged to the extent of $6,000 by a fire which swept an adjoining building. The company's stock was not burned, but was damaged by streams of water flowing from the room above and adjoining.

The Chicago Fuse Manufacturing Company, Chicago, recently has issued a 96-page catalog, which they will be glad to send to anyone interested. The book is very complete, giving sizes, prices and information of every kind that might be desired by buyers of fuses and allied products.

M. H. Detrick Company, Chicago, recently has issued a new catalog, profusely illustrated with photographs and drawings, containing much detailed information on Detrick arches.

The Okonite-Callender Cable Company, Inc., recently has purchased a plant in Paterson, N. J., where it will manufacture lead-covered paper insulated cables.

Charles Cory & Sons., Inc., New York City, are distributing on request the new Cory Interlocks Bulletin No. 105-29-B, describing many types and methods of installation of this device to prevent accidental opening of disconnecting swiches while under load, by station personnel, and to prevent damage from the same cause through malicious tampering. They have also issued a bulletin on central station load indicators, that contains an interesting description of the complete systems and many illustrations of the various types of load and period indicators, manual controls and totalizing watt-meter operated automatic control.

Viele, Blackwell & Buck, New York City, has recently issued its new Bulletin No. 12 on weldless steel poles.

Hurley Machine Company, Chicago, has recently put on the market a small home ironing machine. The roll is 30 in. long and the heating element in the shoe is 1,000 watts. It is automatic and is said to have exclusive features designed to make operation safe and easy, as well as being constructed to require only a small amount of space when not in use.

The Esterline-Angus Company of Indianapolis has issued a new folder, containing information on graphic instruments that will be sent free upon request of interested parties.

The Elwell-Parker Electric Company, Cleveland, has recently developed an electric elevator tructor for transporting and stacking bulky cylindrical and rectangular loads. The tructor handles rolls of fabrics, carpet, linoleum, rubber stock, steel, newsprint and barrels, bales, boxes, textile beams. One man operates the equipment and has clear vision of the forward part of the unit at all times.

Hendrie & Bolthoff Company and the **B. K. Sweeney Electrical Company,** Denver, are taking an active part in the reorganization of the radio trade groups in that city. Both are members of the newly created Radio Jobbers Association, of which George Hopkins of Knight-Campbell Company is president.

Superior Refrigeration, Inc., Lima and Wapakoneta, Ohio, has issued recently a booklet entitled, "Superior Refrigeration," that describes the advantages of electric refrigeration in the home.

The Advance Machinery & Supply Company, Denver, western representatives of the **De Laval Steam Turbine Company** of Trenton, N. J., has recently received an order from the Board of Water Commissioners of the City and County of Denver for one 15,000,000-gal. centrifugal pump, driven through reduction gears by a De Laval steam turbine together with condenser and auxiliaries complete. This makes four De Laval units installed in the Denver water works system in the past two years.

The Bonnot Company, Canton, Ohio, has ready for distribution its Bulletin No. 64 on its Unit-Air ball mill. It describes the principles of construction of the mill and its advantages, and is well illustrated with cuts of the machine.

Capital Electric Company, Denver, lamp refill manufacturer and distributor at 1122 California Street, is constructing an addition to its plant, the cost being estimated at over $20,000.

The Sangamo Electric Company, Springfield, Ill., has announced a new line of amperehour meters, known as Type N, which is a simple form of mercury-motor meter comprising a single copper disk rotating in a mercury chamber located between the pole tips of two large permanent magnets. The meter is furnished in various types.

Butte Electric & Manufacturing Company, San Francisco, has issued recently a descriptive catalog of switchboards and other special electrical apparatus. The manufacture of a new line of "Shockpruf" switches for light and power service is announced also.

The Ideal Electric & Manufacturing Company, Mansfield, Ohio, manufacturers of power apparatus, has announced the reopening of its San Francisco office at 611 Howard Street. A. J. Myers will be in charge.

Hurley Machine Company, Chicago, has announced the organization of the **Hurley Vacuum Cleaner Company.** The new company will take over all of the parent company's vacuum-cleaner business and will have its main office on the eighteenth floor of the Steger Building, Chicago. E. N. Hurley, Jr., has been elected president of the new company.

The F. W. Wakefield Brass Company, Vermilion, Ohio, has recently adopted a new finish, known as "egg shell bronze," for a special line of lighting fixtures. The finish is regular bronze plated upon a solid brass base, but the Wakefield product being die-formed, the result is an eggshell effect instead of being polished as is the case where a bronze finish is applied to spun metal.

Square D Company, Detroit, has announced the completion of a new switch designed and built for use as an entrance switch, disconnect, or for installations demanding infrequent operation. This new type switch, which is quick break, has single throw action, is fusible and is being built in the 60,100 and 200-amp., 3-pole, 250-volt sizes. It is known as the 46,000 line.

Wagner Electric Corporation, St. Louis, has issued an attractive bulletin, No. 143, which gives a complete detailed description of its new and varied line of electric fans, electric current data, and is profusely illustrated.

The picture of this young happy couple was taken on board the Matsonia sailing for Hawaii. If we did not know them better we might suppose this to be a honeymoon trip. C. E. Heise, San Francisco district manager, Westinghouse Electric & Manufacturing Company, and Mrs. Heise are spending a month in the Hawaiian Islands where Mr. Heise will confer with the Westinghouse company agents, The Hawaiian Electric Company, Ltd., of Honolulu.